

THE CULTIVATOR:

A CONSOLIDATION OF BUEL'S CULTIVATOR AND THE GENESEE FARMER.

"AGRICULTURE, AT ONCE THE CAUSE AND EVIDENCE OF CIVILIZATION."

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THE CULTIVATOR.

WILLIS GAYLORD & LUTHER TUCKER, EDITORS.

ADVERTISING SHEET.

The exclusion of advertisements from the Cultivator, has called forth a very general expression of regret; and we are strongly urged, notwithstanding the determination expressed in our first number, to issue a quarterly advertising sheet, as a matter of general interest, both to readers and dealers, and of great importance to those who wish to know where the several implements, seeds, books, animals, &c. noticed in the Cultivator, can be procured. The objection to publishing such a sheet, consisted in the expense of a sufficient number to supply all our subscribers, which would render it necessary for us to charge such prices for advertising as might, under other circumstances, be deemed exorbitant. We have, however, determined to make the experiment; and should the receipts for advertisements amount to a sum sufficient to cover the actual expense of the publication, we shall hereafter issue it at stated and regular periods. It will be issued as a "CULTIVATOR EXTRA," and consist of four pages of the same size as the paper. It will contain, besides the advertisements, a Table of Contents for the three preceding numbers of the Cultivator, and will make a handsome cover in which the papers for each quarter may be preserved.

(3) The first number of the Advertising Sheet will be issued on the FIRST OF MAY. The terms for advertising will be \$2.00 per square of 12 lines (equal to 120 words,) or less, for each insertion, and in the same proportion for advertisements of greater length—the money in all cases to accompany the advertisements.

(3) Advertisements for the May number, of which 20,000 copies, at least, will be circulated, should be sent in as speedily as possible.

AGRICULTURAL GEOLOGY.

Perhaps there is no branch of general science, especially among those that are comparatively new, if we make chemistry an exception, that has had so direct and influential a bearing on agriculture as geology. By a careful examination of the surface of the earth, its mountains, hills, plains and ravines; its rocks and precipices; those places that exhibit the greatest proofs of disturbance and disruption of the strata, a theory of the formation of the earth, and the general principles that have governed the changes it has evidently undergone, has been produced, most interesting to the theologian, the man of science, and, in its results, to the agriculturist. It has been demonstrated, that however broken and de ranged the crust of the earth may be, there is a regularity in the strata that compose it—a sameness in the order of position wherever they occur, that conclusively proves the uniformity and universality of the causes that have produced the appearances we now witness. If we cannot go back to a period in the history of the earth, when nothing was, we can clearly and satisfactorily mark the points where vegetable and animal life commenced, and of course the time when darkness and silence brooded over the earth—a time, since which, we are authorized to say, all the various and beautiful and useful forms of organized life, that now appear around us, have had their commencement. In the strata of the earth, modern science has discovered a mighty volume, on which are inscribed in stone, durable as the mountains, the characters that reveal the beginning of the present order of things, as well as exhibit the most striking proofs of the power and wisdom of the Almighty Architect. Here, as leaf after leaf of the pages are unfolded, we see how the earth, by its numerous gradations and successive changes, has been prepared for the residence of man; and can trace the formation of those soils, without which the plants necessary to his subsistence could not have existed. Many good men have apprehended that the discoveries connected with geology,

were of a nature to conflict with the truths of revelation. Such a supposition we consider groundless; truth can never come in conflict with, or contradict itself; and however much our commonly received interpretations may be shaken, truth itself can never be disturbed, and science can never be legitimately made subservient to the disparagement or overthrow of sound morals and virtue.

In the investigations necessary to show the connection between a proper understanding of geology and agriculture, the origin of the planet on which we live, and its consistence or temperature, in the earlier periods of its formation, are comparatively of little consequence. That the earth was once in a semi-fluid state, the greater equatorial diameter would seem to prove, as the present form is precisely the one which a revolving body in such a state would assume; and that the mass was subjected to an intense heat, seems equally clear from the crystalline character of the oldest rocks of the globe. That the interior of the earth is at present subject to the same heat, seems probable, from the law that regulates the distribution of heat, and the increase of temperature shown to exist in the interior of the earth, by Artesian wells, and wherever the surface has been penetrated to any considerable depth. Some sections of the globe seem to be more influenced by the central heat of the earth than others, producing in the same latitude a widely different temperature; and giving to the vegetation and to the surface, a marked character of comparatively recent origin. As an instance of this, we may mention the country between the Rocky Mountains and the Pacific, where a temperature higher than on any other part of the globe, in the same parallel, prevails, and the whole country seems but recently to have been subjected to vulcanian agency.

The most common division of the materials that constitute the crust of our planet, has been into primary, transition, secondary, and tertiary formations, and, though capable of some modifications, it is probable this arrangement is as satisfactory as any other, for popular purposes. Underneath the whole surface of the earth, at various depths, and every where the lowest of the rocks, so far as science has been able to ascertain, lies the first of the above divisions. These rocks are unstratified, or contain no traces of deposition, until the upper part of the mass is approached. The agency of heat, and the admission of water to the metallic basis of the earths and alkalies, offer two causes, which either singly or conjointly, seem sufficient to explain the production and state of the mineral ingredients of these rocks. Prof. Buckland states the number of distinct varieties of the crystalline unstratified rocks to be eight; and that there are twenty-eight well defined divisions of the stratified or superior formations. As, however, the soils produced from every variety of the primary rocks, (unless we except the primitive limestone,) possess in general the same essential properties, the distinctions are more in name than reality, so far as the purpose of this paper is concerned. The most remarkable features of the primary rocks is their crystalline character, and the total absence in them of all organic remains. Nothing having life, vegetable or animal, seems to have been capable of enduring the heat that prevailed at the time of their formation. Thus geology has established two facts of the most important kind, the first proving that existing species have had a beginning at a comparatively recent period of our globe; and the second, that these have been preceded by several other systems of animal and vegetable life—and as the beginning of these is also demonstrated, the theory of infinite succession is clearly untenable, when applied to plants and animals.

In the transition series of rocks, is included all kinds of stratified rocks, from the slates in which the first traces of animal or vegetable remains are discovered, to the termination of the great coal formation. Lyell and Buckland remark, that the animal remains in the more ancient of these rocks, or the slate group, differ in species from those in later or carboniferous rocks of the same series. The transition rocks present alternations of slate and shales, sandstones, limestones, and conglomerate rocks, all showing, by their composition and structure, and the remains of organic life they contain, that they were deposited in form of mud, sand, or pebbles in deep waters, or in some cases those that were violently agitated. A very large proportion of all soils is made from the disintegration of the transition series of rocks, and a knowledge of the nature of those belonging to this class is particularly needful to the agriculturist.

The secondary series of rocks are composed of those that lie above the great coal formations; and are composed of extensive beds of sand or sandstone, alternating with pebbles, clay, marl, and limestones. These strata have evidently been derived from the destruction of older, or primary and transition strata, and it is not uncommon in these successive layers to be able to trace the origin of the materials from which they were con-

stituted. The scale on which this disintegration or breaking up of the older masses, the distance of their transportation, and the vast amount of their deposition, prove the action of disturbing causes of the greatest force and magnitude. It is to the secondary formation that we owe most of the soils adapted to human industry, and the arrangement of the strata seems admirably adapted to the wants of the occupiers of the surface. In the language of Dr. Buckland, "the movements of the waters, by which the materials of strata have been transported to their present place, have caused them to be intermixed in such a manner, and in such proportions, as are in various degrees favorable to the growth of the different vegetable productions which man requires for himself and the domestic animals he has collected around him." One of the most beneficial results of this intermixture of permeable and impermeable strata, is the providing a plentiful supply of water for our wells, springs and rivers, without which a country must be uninhabitable, and which could not exist, were it not for this formation and arrangement of the earth's surface.

The tertiary formations, are chiefly distinguished from those of the secondary class, by the repeated alternations of marine deposits with those of fresh water. Attention to these facts was first induced by an examination of the depots above the chalk or lime formation of Paris, and for some time were supposed to be peculiar to that neighborhood. A comparison of the strata there, and fossils embedded in them, with others in different parts of the world, bearing the same relative position to the other formations, has, however, shown that this formation is of great extent, and that a large part of the earth has been subjected to several successive revolutions and submersions—part of the time in waters salt, and part in those that were fresh.

Above these formations lie two others, more or less extensively diffused—the first, is that coating of boulders, gravel and sand, mixed with clay or loam, which is spread over almost every part of the earth's surface, and which has been obviously mingled confusedly together by powerful currents of water, subsequent to the deposition of the regular strata, and this is called diluvium. The deposition of this mass, from its containing materials from all the other strata, and its consequent lateness of formation, has by many been considered as the effect of the Noahian deluge, how correctly we do not pretend to say. The other formation to which we have alluded is that which is now constantly going on from the deposition matter brought down by streams from mountains and hills, and carried by floods to valleys, or the sea, and there left—constituting the richest and most fertile of soils. This is called alluvium; but in extent as compared with diluvium, or any other of the previous formations, must be considered as very limited.

Until within few years, the study and comparison of the remains of former vegetable and animal life, called fossils, abounding in most of the strata above the primary series, though their existence was well understood, had received very little attention; and it is to Cuvier that the world is principally indebted for the discovery and exploration of this new world. Many able men have followed in the path pointed out by him, and the result has been that each of the series we have named, and many of the most prominent strata in each series, have their peculiar fossil plants and animals, marking the separation and distinct age of these series or strata, from the others. So marked are these remains, that the geologist is now able, from the inspection of a fossil or boulder, to assign its place in the series, with as much certainty and accuracy as the anatomist disposes of the separate and displaced bones of a skeleton. The most beautiful and striking results of the study of organic remains may be found in the geological works of Buckland or Lyell.

All geologists and chemists are agreed in considering soils as resulting from the abrasion, disintegration, and decomposition of rocks, with the addition of certain saline, vegetable, and animal substances. Ever since the deposition of rocks, various agents have been operating upon them to wear them down, to cause them to crumble or disintegrate, and often to decompose them into their proximate or ultimate principles, while they have been continually receiving vegetable and animal substances, with soluble salts. * * * Now we find, that nearly all the rocks which exist in large quantity, are composed chiefly of silica, alumina, lime and oxide of iron, and these are the ingredients that are found almost invariably in soils. Silica is in the largest quantity both in rocks and in soils, alumina next, while the other ingredients are in much smaller proportions. *

* * * To give a numerical statement, derived from numerous analyses, such rocks as most of those in New England, contain 66 per cent of silica, 16 per cent of alumina, 6 or 7 per cent of potassa, 5 per cent of oxide of iron, and of lime and magnesia, a much less quantity;

and the composition of our soils will probably be found to correspond very nearly with these numbers, with the exception perhaps of the potassa, which may in a good measure have disappeared by the operation of vegetation.^{**} That this is, in the main, a correct representation of the manner in which soils are formed, and of their general composition, no one who is in the habit of observing the action of the agents now at work on the crust of the earth, can doubt.

Where the soil is mostly based on the primitive rocks, or where these approach the surface over considerable tracts of country, the soil will partake of the character of the rocks below, and may therefore be properly termed primitive. As an example of a primitive region, we refer to New-England, the most of which is decidedly of that class—the tracts of transition, secondary, or tertiary, being of limited extent. Of the primitive soils, that formed from gneiss may be considered the poorest, and that from rocks in which feldspar abounds the best. Perhaps the difference may be found in the greater quantity of alumina the latter contains, rendering the soil more tenacious than that formed of a greater proportion of silex. Feldspar also contains large quantities of potassa, in some instances equaling 14 or 15 per cent, and this, unquestionably, exercises a powerful influence on the fertility of the lands produced by its decomposition. Primitive soils are less fertile, naturally, than those on the other stratas; since, as the fertility of all soils is owing to the quantity of animal and vegetable matter combined with the original earths, it is clear that the others, containing in their substance much of their fertilizing matter, must by their disintegration produce soils more readily productive than such as have originated at once from rocks destitute of these ingredients. There are sections, however, of all primitive districts, that are of the most fertile description; and in all cases where the earth is of sufficient depth, it can be brought by the application of manures to any desirable degree of productiveness. Primitive regions are noted for their salubrity, for the abundance and purity of their waters, and for their exemption from those sources of malaria and death, that render a settlement in some of the other districts, only a certain approach to the grave. Primitive regions are the most difficult to cultivate; but the population of such sections, have always been remarkable in all parts of the world for their energetic, active dispositions, and their elevated moral standing. We need not go beyond the limits of the United States for satisfactory illustrations of these statements.

Soils formed from the different strata, are not always accurately defined by the rocks they cover. Examination shows, that during the abrasion and wearing to which they have been subjected by the strong currents of water passing over them, the detritus has generally been moved to some considerable distance in a direction with the current; and in many instances rocks of a rare kind or limited extent, have been discovered by tracing back to their origin the fragments so removed. Of this kind of facts, numberless instances may be adduced in the northern states, where the diluvium is evidently the result of a current flowing from the north. Of course the soils to the south of any class or strata of rock, feel its influence more or less as they are removed from it in that direction to a greater or less distance. If the strata is sandstone, silex will predominate in the soil above, or in that made from the disintegration: if of limestone, the earth will be filled with blocks or boulders of that stone, or of limestone gravel, the quantity diminishing as we recede from the place of outcrop; and if of clay shale, the soil above will abound in clay in proportion to the quantity contained in the decomposed or worn out rock of that species. To the agriculturist, the knowledge of these facts is important, as enabling him to determine with great certainty the qualities of the soils he cultivates, or the character of the farm he is intending to purchase.

The transition class of rocks succeed the primitive, and as a greater surface of this rock is exposed, and the class is composed of more easily disintegrated materials, it exercises a greater influence on agriculture than the other. In addition to these things, the transition strata contains portions of animal and vegetable matter, which, when combined with the original earths, contribute much to the fertility of the soils so produced. That these rocks are rich in animal remains, the multitude of fossils found in them most abundantly prove. One of the best defined tracts of transition to be found perhaps in the world, may perhaps be seen in western New-York. The same strata indeed occupies part of Ohio, the southwestern part of Upper Canada, Michigan, Wisconsin, and probably stretches to the Rocky Mountains, but nowhere in the whole extent can it be so well observed as in New-York. Here the whole series, from the stratified primitive rocks of gneiss and limestone upwards, to within a short distance of the coal formation lying above in Pennsylvania, can be distinctly observed, and the effects of the different kinds of rocks, sandstones, limestones, clay-slate, &c. &c. most satisfactorily traced. The thickness of the transition strata in New-York, or from the primitive rocks to the coal formation, is probably eight or ten thousand feet; and where the same strata outcrops, in Penn. it has been estimated at seventeen thousand feet; showing that some of the strata are thinner at the north than at the south. That such is the case, the example of the rock called by our state geologists, the Oriskany sandstone, conclusively proves. This strata, easily distinguished

by its structure and its fossils wherever it appears, has a thickness in Pennsylvania, of about 700 feet, while in Oneida, Onondaga and Cayuga counties in New-York, it is found from 18 inches (or in one case, at the celebrated Split Rock limestone quarry near Syracuse) it is only a thin layer of sand) to 30 feet. The effects of the several limestone strata are very distinctly marked on the soils of this series, and give to what has been termed the northern slope of New-York, its peculiar character for fertility. The soils above the sandstones of the strata, except in some places too level for draining, are dry; those above the limestones, are dry and warm; above the shales, varying in their quality according to the nature of the rock below, but always more compact than the others, owing to the larger amount of clay the decomposition of such shales is sure to produce. It may be remarked too, that the influence of these rocks are uniformly felt to the south instead of north of the places where they appear, thus showing that the abrading agent acted from north to south. That this immense mass of rocks, of such different materials, and each strata of such uniform and great extent, was deposited in still waters, and at widely separated intervals of time, the perfect state of the fossils they contain, as various and as well defined as the strata in which they are found, most clearly demonstrates. Much the larger part of this vast area of transition is marked by a descent or dip of the strata to the south, of from 30 to 50 feet in a mile, owing to which cause the streams flowing north abound in falls as they pass from one strata to another, while those flowing from the south, glide along over an unbroken surface and are boatable almost to their sources. The best wheat regions in the United States, and probably in the world, are found on the transition strata; and for proof of this, so far as this continent is concerned, it is only necessary to refer to the transition districts of Virginia, Pennsylvania, New-York, Ohio, and Michigan. For all the ordinary purposes of farming, soils based on the transition series of rocks, are found preferable to most others, easily cultivated, and very productive. Every person acquainted with the character of these rocks, will be able to distinguish the general characteristics of the soil near them, and can rightly his choice accordingly. As a general rule, it may be observed that the excellence and depth of fertile soil, will depend on the permeable nature of the subsoil, and its freedom from surplus or stagnant water. Soils too porous or too dense, are alike objectionable to the agriculturist; the first allowing manures to pass beyond the reach of plants, and the last being hard to work, and till their character is partially changed, improper for some crops.

Immediately above the transition appears the secondary rocks, embracing the coal formations of this country, and reaching to the south of the great transition belt, from the Alleghanies to the Rocky Mountains, covering a large part of the Ohio and Mississippi valleys, besides considerable districts in other parts of the United States. The interspersed strata of this formation are shale, slate, limestone, coal, and the disintegration of these, as in the case of the transition class, produces soil of various conditions and qualities. Nowhere can a soil of greater fertility be found than is embraced in the immense basin bounded by transition of the north, the Rocky Mountains of the west, the Ozark and Tennessee ranges to the south, and the Alleghanies to the east, including the greater parts of Ohio, Indiana, Illinois, all of Missouri and Arkansas, and the most of Tennessee and Kentucky; and perhaps nowhere in the world can a district of the same dimensions be pointed out, capable of supporting so large a population as this secondary region. For all the purposes of agriculture, the upper transition and the secondary, may be considered the same, as the soil products, &c. do not essentially vary, the one from the other. The principal difference existing is found in the fossils which mark a new and later era, and those vast beds of coal so abundantly adapted to, and apparently expressly provided for, the wants of the future millions of the human race. When we look at the manner in which these beds of coal are diffused; the influence this mineral has exerted, and is destined to exert on the sciences and arts; and its indispensable nature in the economy and comfort of yearly increasing millions, the mind can scarcely refrain from admitting the evidences of wisdom and design this formation presents.

The last and upper series of rocks, is termed the tertiary, and bear, in their constitution and fossils, every mark of comparatively recent origin. These rocks abound in marls, easily disintegrated rocks, and the soils originating from them generally partake of the character of the rocks beneath. A broad belt of tertiary may be found in the United States, considered as beginning at Long-Island, embracing the greater part of New-Jersey, a considerable portion of Maryland, and the states still farther south, and terminating on the Gulf of Mexico. The general character of the soils is sandy, and until within a few years has been considered of an inferior description. The united advances, however, of geology and agriculture, have shown that these nearly worthless districts, as they were thought, contain below the surface, the elements of the greatest fertility, and that nothing but knowledge to appreciate the fact, and well applied labor to avail the farmer of the provided treasure, was necessary to render these sterile plains eminently productive. The marls, and the green sand found but a few feet below the surface of most of these tertiary tracts, are invaluable sources of fertility when raised from their beds and applied to the sandy

earths. The marls are strongly calcareous, and abound in animal and vegetable matter, while the green sand contains according the report of Prof. Rogers no less than ten per cent of potassa, sufficient of itself to constitute this substance one of the most efficient fertilizers. The clay combined with the marl, when spread on the soil, gives the power of retaining moisture, and thus corrects one of the greatest difficulties in the cultivation of this class of soils. The discovery and application of these substances has produced an entire change in the agriculture of a large part of New-Jersey, and as beds are opened in the states further south, and the attention of the cultivator there is directed to the subject, we may reasonably expect the same beneficial result will ensue on the tertiary sands of the south, that have been produced by the same agents on those of the north.

Above the rock formations we have named, occur the masses of earths called *diluvium* and *alluvium*, on which all the operations of husbandry are conducted, and on the material of which, and their proportions, the fertility or sterility of soils depend. Diluvium occupies more of the surface of almost every country than any other. It is composed of boulders, pebbles, clay, gravel and sand in ever varying proportions, furnished by disintegrated or broken up strata; the boulders and pebbles usually rounded by attrition, and bearing in their appearance every mark of transportation and deposition. It has resulted from the action of powerful currents, and no existing cause seems capable of producing such effects; at least none such are now active. It is spread over nearly all the strata; is found covering with its masses high mountains, and most of the rounded hills and elevations spread over the country, owe their origin entirely to accumulations of this material. In some parts this covering is composed of gravel or pebbles so loosely put together as to be unfit for agriculture; in other places these pebbles are cemented with clay, and produce a subsoil impervious to water and improper for some kinds of vegetation. This compact mass is called till or hardpan. We are frequently able to trace the materials that constitute a bed or covering of diluvium to their source, and where this is the case, the course of the currents producing it, and its value to the agriculturist, can in a great degree be determined. The diluvium produced by the breaking up of limestone strata will usually be found equal to any other, and the position of the strata, and course of the currents, will enable the observer to determine where such will be likely to exist.

Alluvium, where it is found, lies above all other soils, and is the richest of all that have been produced. This soil is made from lightest, richest and most valuable parts of all others, being washed from the surface by rains, carried down by the rains; and deposited in slow moving or stagnant waters. The deltas of the Ganges, Nile and Mississippi; the valleys of the Missouri, Connecticut and Genesee, furnish some of the most striking and familiar examples of this soil. Where not liable to destructive inundation, alluvium forms the most desirable of soils, being of almost inexhaustible fertility, and easily worked. The greatest drawback on such districts is a tendency in them to generate malaria, or the agent that produces fever and ague, bilious fevers, or yellow fevers, according to its intensity and duration. In conclusion we would say, if the farmer would understand the nature of the soil he cultivates, he should be able to trace its origin; and to do this, geology furnishes the key and the guide. Let them be improved.

CULTURE OF THE POTATO.

By common consent the potato has been placed at the head of all the edible roots, wherever it has been introduced, and the climate would admit of its cultivation. Originating from an obscure and worthless root among the Cordilleras of South America, in spite of prejudice and opposition, it has spread with a rapidity unknown to any other vegetable, and is doubtless destined to make the circuit of the globe, adding in an incalculable degree to the means of subsistence. There are few if any vegetables grown in the temperate zone that yield so great an amount of food per acre as the potato. Wheat, according to Sir H. Davy, contains 950 parts of nutritious matter in 1000; and the potato 250; but when it is remembered that the yield of the potato on an average is from ten to fifteen times as much per acre as wheat, the advantage in favor of the potato is manifest. Besides, such is the human organization that pure nutritive matter is injurious to its healthy functions, and the stomach requires to be more or less distended with other matter before the excitement necessary to nutrition takes place. We are, therefore, justified in supposing that good potatoes used exclusively as an article of food, would be less injurious than pure wheat flour. Be this as it may, the potato in most civilized countries now ranks next to an article of food to the rice of the tropics; and the wheat and maize of the more temperate regions. To Europe is America indebted for the Gramineæ, and had we returned them nothing more than the potato and maize, the debt must have been considered as cancelled.

The potato is usually propagated by the tubers or roots, but new varieties are obtained or old ones that have partially degenerated restored, by cultivating them from seed. There are few plants that show more decisively the improvement that may be made by cultivation than the potato. In 1838, a quantity of the original roots were brought from South America to England, and carefully planted. The result was small inferior root, more resembling the ground nut than the potato,

*Prof. Hitchcock's Economical Geology of Massachusetts, 7.

and not widely differing in appearance from those of the first year's growth from seeds. There is an idea prevalent among many farmers that potatoes are mixed, or what by the breeder of animals would be called crossed, by having several kinds planted in the vicinity of each other. This is an erroneous opinion. The crossing takes place in the flowers or seeds and not in the roots; and hence there is the same uncertainty that the seeds of any given variety of this root will produce potatoes of the parent kind, that there is that the apple seeds will give apples like those from which they are taken, a thing of very rare occurrence.

Every farmer who has paid attention to the manner of growth in the potato, is aware that the tubers are not produced from the roots proper, these being, as in other plants, used solely for the purpose of nutrition, but on shoots thrown out above these, and nearer the surface of the earth. It was the opinion of Decandolle that by repeated coverings of the stem, such shoots, and of course potatoes, could be produced the whole length of the stalk, and some experiments that he made seemed to favor such a supposition; still we must be permitted to say, that having in part repeated his experiments, we have found nothing to justify the opinion that such a result would be effected by this treatment of the stem.

The propriety of cutting the tubers or planting them whole has been much discussed, and the multitude of experiments on record would seem to show by their conflicting results, that at least as much is depending on other circumstances, as on the root being planted in a whole or cut state. If an acre of ground be planted in hills or drills with whole potatoes, and another acre be planted with sets or cuttings at equal distances with the other, the experiments made by the London Horticultural Society would go to prove that the acre planted with whole potatoes would yield the most, but not much if any more than the additional quantity of seed required in planting. If whole potatoes are used, from twenty-five to thirty bushels will be used; if cut, not more than half that quantity will be required. In both cases, however, much will be dependent on the size of the whole potatoes, and the number of eyes in those cut. The distance between the rows must be determined by the length of stem produced by the potato, and the several varieties vary much in this respect.

In cultivating the potato a climate rather cool and moist is found most preferable to any other. Of course the root succeeds much better in the northern states and in the adjoining British provinces than in the southern parts of our country. In the north, parts of Maine and New-Hampshire, and the Province of New-Brunswick, are celebrated for the excellence of their potatoes. In New-York, the tract lying east of Lake Ontario, between that and the Mohawk and Black rivers produces good potatoes; and the elevated lands in the south of New-York and the north of Pennsylvania are noted not only for the quality of their potatoes but the large crops they annually produce. The potato will succeed well on almost any kind of land provided it is rich, and is not wet and clayey, but for this, as for most other crops, a friable loam of sufficient consistence to prevent drought will be found superior to any other. Swamps containing large quantities of vegetable matter, when sufficiently drained, have produced great crops, and what in new countries is termed muck land, is also favorable to their growth. Two things in a potato soil seem to be indispensable; it must be rich, or a crop cannot be expected; and it must be sufficiently loose to allow the shoots that form the tubers to spread and enlarge freely. In Europe the British islands are justly famed for their root culture, and the introduction of the potato into Ireland has enabled that country to double its population; if it has not banished want and distress, these evils are not of as frequent recurrence now as formerly, notwithstanding the increase of consumers. Cobbett, indeed, charged upon the potato all the evils of Ireland; and Dr. Tissot has demonstrated to his own satisfaction, that no potato eating nation has ever produced a great man.

The greatest crops of potatoes on record are those grown by General Barnum of Vermont, which reached from 1,500 to 1,800 bushels per acre; and he gives it as his opinion, that in a good soil, and with his mode of culture, from 800 to 1000 bushels per acre may be safely calculated upon. The reports of the agricultural societies of our country show that from 500 to 700 bushels per acre are not uncommon. Mr. Baché, of Wellsborough, Pa. in 1839, raised 600 bushels to the acre, and the crop of Mr. Morris, of Cattaraugus, in this state, fell but little short. The average crop in the country cannot we think be estimated at more than from 175 to 250 bushels, the influence of the seasons being more felt on this crop than many others.

The methods of planting are various. Gen. Barnum's mode, after a careful and thorough preparation of his land, is to plant in drills 22 inches apart, and the sets in the drills 10 inches from each other. The drills are kept clean, but the earth is hilled around the plants only once in the season; as he considers there is much danger of disturbing the young tubers by removing the earth, or causing the formation of new shoots for tubers by repeated hoeings or hillings. The secret of his great crops appears to consist, in his bringing rich fresh earths, the scraping of the ditches or streets, or earth from the barn-yard, or the mould deposited in swamps, and giving each hill a shovel full, as a top dressing. He does this with the aid of a horse and cart, the horse and the wheels passing between the rows.

We have seen very good potatoes grown by simply

dropping the seed on a clean turf, and spreading over them a covering of straw six or eight inches in thickness. The straw must be evenly placed, and if moved by the wind before it gets settled together, which it will soon do, it must be carefully replaced. This covering of straw keeps the surface moist, the grass cannot spring up through it, and in the fall, the potatoes are found on the surface of the turf, and perfectly clean when the straw is removed. The danger in this mode of planting would seem to lie in a dry season which is frequently fatal to the crop; and a heavy crop is rarely in this way produced.

In the Monthly Visiter, for February, 1840, is an account of an experiment with potatoes, which was eminently successful, and deserving of notice. In the spring of 1839, Mr. Whitney of Craftsbury, Vt. "broke up a piece of green sward, harrowed it thoroughly, carted upon it manure from the yard at the rate of 32 loads to the acre, cross plowed it, harrowed it again, and planted it in the usual manner in hills. At the proper plowing between the rows, the piece was well hoed, and at the proper time was repeated. In the fall he dug from this piece at the rate of 300 bushels to the acre, which for this year, on account of the rust, was considered a good yield. By the side of this piece, on precisely the same quality of soil, manure was carted and spread at the rate of 32 loads to the acre; the sward was then carefully turned over, and the furrows laid flat with a roller. Between every other furrow, where they came together, (that is between the first and second, and between the third and fourth, and so on) holes two feet apart, were made with a sharpened stick, about three inches deep, large enough to receive the seed. Into each hole one piece of potato was put, and the holes filled up with mellow soil, even with the general surface of the field. There was no further labor bestowed upon the crop till the digging, when the quantity produced was a little over 400 bushels per acre. Although never hoed, not a weed was seen in it. Before digging, the field had the appearance of having been well hoed, the potatoes having raised up the ground above them."

The Rohan Potato is an instance of the fortunate production of a new and valuable variety from seeds. This root which, wherever it has been tried in our country, seems to have satisfied all reasonable expectations that had been formed, is destined doubtless to add much to the value of the potato crop; and no good reason can be given why other and still more productive kinds may not be produced by the same methods. A comparison of a crop of Rohans with one of the original wild potato, would seem to justify expectations of still further improvement, from the combined agencies of cultivation and reproduction from the true seeds.

In all cases the value of early potatoes is great; and particularly so in the vicinity of cities, where a constant demand, and ready market for such vegetables, always exists. Experience has taught the growers of potatoes for the London market that ripe potatoes can be found from ten to fourteen days earlier in hills or drills planted with sets from the top end (the one that has the most eyes) than in those planted from the root end of the tuber. The Lancashire gardeners therefore assort their sets, so as to have them ripen at the same time, and thus obtain roots for market sooner than they otherwise could do. It is probable that quite an improvement might in this country be effected in the same way.

GRAFTING—APPLES.

The best and most certain methods of propagating any desirable kind of fruit is by grafting, or by inoculation. The first is performed in the spring, the last in summer or autumn, or when the bark of the tree will leave the wood freely. Grafts, or scions, must be cut as early as February, when they are to be kept any time, or removed any distance; but if they are to be inserted at once, they may be cut when wanted for setting, unless the vegetation is too far advanced to render the operation proper.

Next to the scions, the wax for excluding the air and completing the union of the parts is to be attended to. Several modes of preparing this composition have been published, but a very good wax may be made of two parts resin, one of beeswax, and one of tallow. These are to be melted together, and may be made into rolls by turning the melted mass into water, and working it as shoemaker's wax is prepared; or it may be laid on hot with a brush as soon as the scion is put in its place. For nursery grafting, or on small branches, it will be found most convenient to have the wax spread on strips of cotton cloth, which can be applied with great facility.

The operation of grafting is founded on obvious principles, and is so simple in itself, that it may be performed by any one. When a tree is cut down in the spring, if it is young and vigorous, a series of granulations or prominences will be seen in a few days or weeks forming themselves around the stump at the junction of the bark and the wood. When a tree is partly cut down, but the circulation is not wholly interrupted, similar granulations will form on the upper part, and if these meet, a union of parts will take place. On the stump of the young trees of the elm or beech, these granulations frequently push up into sprouts, and we have seen the top of a stump circled with a row of such. Grafting is only performing by art, what in such cases is done by nature; or in other words it consists in placing the divided parts of the stem and scion, in such a position that the granulations as they form may unite

without difficulty. This is most generally done by splitting the stock with a sharp knife, giving a wedge-like form to the lower end of the scion, and carefully inserting this in the cleft, in such a way that the bark of the stock and scion shall come in contact. Wax is then applied to exclude the air, and secure the scion in its place till the union takes effect.

Where an orchard is to be planted anew, the better way is, at the present time, to apply to some nurseryman, and make a selection of such fruits as are the best adapted to the purposes for which the orchard is designed; but in far the greater number of cases the orchards of the farmer have been planted from nurseries of ungrafted trees and of the natural or inferior fruit, and in such instances the only way to change the products from poor to good is to graft. Those most experienced in grafting consider the best time for the insertion of scions to be when the buds have swollen and are just beginning to open; a little earlier or a little later will do, but if so early as to freeze the exuding sap, it will be fatal; and is too late, the bark is apt to start from the stock, and the union, if effected at all, must be delayed and imperfect.

Great care in selecting or grafting fruit trees should be used, not only that the varieties be of the most valuable kinds, but that they should succeed each other, so as to keep a supply for the longest possible period. Thus little attention to this point will give a supply of apples the year round, peaches for several weeks or months, and cherries and plums for a long time. It must always be remembered that a good tree occupies no more space than a poor one, while the difference in profit is very great. The rich Bough, Swan or Pippin, requires no more room or care than the most inferior varieties; and though many of our farmers are so negligent as to be content with the last, we have never seen one that would not gladly accept of the better kinds of fruit, when placed within his reach.

The best kind of apples for the table are rarely first rate for cider; and where an orchard is intended for the production of that article, particular reference must be had to it in the selection of trees. The easiest way of determining the relative value of apples for cider is to observe the depth to which they sink when placed in water. It is well known that the more saccharine matter the juice of an apple contains, the heavier it will be, and the richer the liquor produced from it; of course the sinking of an apple in the water serves to indicate its value, or its weight. Testing the liquor from apples, by the hydrometer, is the most accurate mode of determining the worth of the fruit for cider, and the results thus obtained are found to agree with experience. The Harrison, Winesap, Hagloe crab, and similar apples are proved to be the best for cider. The Downton Pippin, an apple produced by Mr. Knight, from an artificial impregnation, is highly esteemed in England, and has been well spoken of by those who have tried the variety for cider in this country.

When the feeding of apples to animals first began to be practiced to any extent, it was supposed that sweet apples were far the most valuable; but more experience seems to show that their worth is more depending on their ripeness or the development of their saccharine properties, than on any thing denoted by mere sweetness or sourness. If animals are allowed to feed on them before they are ripe, sweet apples are the best, as the acid of an unripe apple injuriously affects the teeth, making them sore, which a sweet apple will not do. By a strange oversight in rural economy, many farmers during the earlier progress of the temperance movement, not aware that apples were of so great value for animals, making pork, &c. were guilty of the folly of cutting down their orchards, an act which most of them have since had leisure to abundantly regret; and which will not probably be soon repeated, as experience shows that few parts of a farm yield a better revenue than the orchard.

We add a few of the most approved varieties of apples, such as will furnish in the smallest space, the succession of good fruit, the greater part or the whole of the year, so desirable to every farmer.

The Juncatings are the earliest of our apples ripening in June. There are two kinds, one of a yellow color and the other red striped. They are small round fruits, of a pleasant flavor.

Prince's Yellow Harvest, and the Sinequanon are excellent apples, ripe in July. The first is a pale yellow, sub-acid, and of fine flavor. The last of a greener color, and very highly flavored. Both are of a medium size.

The Sweet Bough, and Tool's Indian Apple, are our best August apples. There are two kinds of the first, one white, ovate, and the other oblong and red striped. This last is sometimes called the red and green sweeting. They are both very superior apples and should have a place in every orchard. Tool's apple originated in Wayne county, and is a beautiful apple for the table or for cooking.

Of what are termed fall apples there are many varieties, all good, and the preference must be determined by the taste of the individual, or the use to which the fruit is to be put. The Golden Pippin and the Fall Pippin both ripen in September and are fine fruits.

Of the winter apples, those that ripen from October to December, and keep until June, we have the Spitzbergs, three varieties, the Newtown, Esopus, and Flushing; Seek-no-further, two varieties, red and green, and dark red or black. Several kinds of Pippins, excellent apples, and some of them keeping till June; the Green

ings two kinds, one large and ripening in October, the other of medium size, deeper green, and ripening too late for exposed situations; the *Gill-flowers*, white and black, good apples; the *Pearmain*, generally known and esteemed; the *Swaar* apple, one of the finest of fruits, large and high flavored, and deserving a place in every orchard; the *Roxberry Russet*, keeping well and of good flavor; with others that are known and esteemed in particular sections of the country.

To the cider apples mentioned above may be added the *Golden Harvey*, called the *Brandy apple* on account of the flavor of the liquor made from it; *Knight's Siberian Harvey*, from the *Golden Harvey* and *Siberian crab*, and produces liquor of the extraordinary gravity of 1091; and *Hewes' Virginia Crab*, the qualities of which are much the same as *Hagloe's*, and from which the highly prized *Crab* cider is made.

It will be seen at once that there is a great variety of excellent apples to select from, and that while grafting is so easily performed, and the best kinds of fruit are accessible, there can be no excuse for growing fruit that hogs will not eat, or encumbering the ground with trees that bear little or no fruit.

WORK FOR THE MONTH.

If the meadow grounds of the farmer are not naturally free from stones, one of the first things that require his attention, after the frost has left the ground, and it has become settled, is carefully to pick up all stones that appear, and which if left will be in the way of the scythe or the rake. Besides the vexation and loss of having your man half the time employed in grinding or sharpening stoned scythes, there will be the additional loss arising from these stones not permitting the mower to approach the surface with his implement, where, if the bottom is white clover, the best of the grass is found. Gather all these stones, and use them in filling in blind drains, for which there is much necessity on almost every farm; but if you do not want them in drains, pile them; they are less hurtful almost anywhere than in the meadow.

In the spring of the year much benefit may be derived from what is termed waste water; that is the water that flows over the surface without being absorbed. All such waters contain more or less vegetable and animal matter which if allowed to subside, forms one of the most fertilizing materials. As proof of this, we need only refer to the sediment deposited by large rivers, as the Nile or the Mississippi. If such spring waters are allowed to flow off rapidly, they carry these fertilizing matters with them; if they are made to pass off slowly, or are spread over a large surface, these particles are deposited or intercepted, and their value retained. The wash of roads in the spring is peculiarly rich, and every precaution should be taken to secure the advantage they afford. It is almost a criminal negligence in the farmer to allow the waste of the roads, yards, &c. to be lost to the farm. A thorough irrigation with such waters will hardly fail of leaving as large a quantity of the salts of lime and fertilizing matter on the soil, as an ordinary dressing with manure. In this way every farmer may and should make important savings.

Dairy cows demand particular attention this month, to keep them from falling away. A cow that is turned into the pastures in May in good flesh and condition, is worth one month more to the dairyman than another cow equally good for milk, that has lived through the winter by hook or by crook, and which, instead of giving the product of the first month's feed in milk, is obliged to appropriate it to the formation of flesh and the gaining of strength lost by the poverty of the winter's keeping. Roots now show their value. Half a bushel of carrots, ruta baga, and we presume sugar beet, though we have never tried them, will materially aid the animal, and daily add to the quantity of milk. Carrots we like the best of any roots for milch cows; but ruta baga, if the roots are sound and fresh, and given with a little salt, will not injure dairy products.

Trees may be transplanted in this month with every prospect of success, where reasonable attention is paid to them. As the nourishment of trees is derived from the fibrous roots, as many of these must be left as possible when the tree is taken up. The practice is too common in transplanting trees to dig a small hole, and then cut off the roots in order to force the tree in. The fine roots are lost in this way, except in very young or small trees, and a failure of many must be expected. The root of a tree should never be dried from the time it is taken from the earth till it is re-planted. To prevent drying, nursery men in packing them use moss, saw-dust, &c., substances that retain water with great tenacity, and thus preserve the roots moist for a long period.

April is a good month for the application of plaster to plants. Experience serves to show that profuse applications of this substance are useless, and that a bushel and a half, or two bushels, will usually produce as much effect as five or ten. The finer it is ground the better; and there is always the most effect observable when the grains or the grasses on which it is used, have started sufficiently to cause a considerable part of the dust to be deposited on the leaves. Plaster is of no value on wet clay lands. Sandy or gravelly soils feel plaster the most, and it is on such, too, that ashes do the most good. On such soils the growth of clover and its kindred grasses, lucerne, and sainfoin, is astonishingly increased by plaster, and no good farmer will deprive himself of its aid.

Sowing grass seeds on winter grain is generally per-

formed this month, and is perhaps as well as if done earlier. The ground is now moist, there are frequent rains that assist in covering the seeds, the spring soon begins to have some influence, and the vegetation is more likely to succeed than if delayed until the young plants, before being rooted, would be exposed to the heat and drought of summer. Farmers are rarely liberal enough in the use of grass seeds. Lands but half seeded can give but half a crop of meadow or pasture; and as a large portion of the soil is left uncovered, the seeds of noxious weeds find a resting place and get root where they would not, if occupied by useful plants.

One of the most essential operations of the farm is plowing, and on most farms the greater part of this is performed for spring crops, as they are called. If this business is not done well, or if the soil is not in a proper condition for plowing, poor crops may be expected.—Soils that are gravelly or sandy may be plowed almost at any time, but those that are retentive or clayey, should never be plowed for crops while wet, as a part is converted into mortar in the operation, and does not recover itself from this state till some months have elapsed, and frosts and atmospheric changes have acted upon it. It is not uncommon where clay soils have been cultivated a long time, to find a stratum of earth at the depth to which the plow usually penetrates almost as hard and impenetrable as stone. This is occasioned by the repeated action of the plow, where the soil was too wet, in compressing and smothering the particles below the share. In England it has been found very useful to break up this *pan* with a plow running deeper than ordinary ones. If this is thrown up when dry, and pulverized by frosts in the coming winter, a greater depth is given to the soil; and when properly manured, the crops are materially improved. Such deep plowing has in some respects the effect of spading; but neither deep plowing or spading the soil, can produce good crops in the first instance, unless all is rendered fine and thoroughly incorporated with manures.

Spring wheat is one of the crops that must be attended to this month. It must be sown as soon as the ground can be fitted for its reception. It grows best on lands new and rich, but land that will grow good winter wheat will also grow good spring wheat. The land should be clean, and it therefore does best after well manured hoed crops. It does very well after peas, or on a clover ley, if clean and rich. Heavy manuring the crop itself is prejudicial, as it gives more straw than will fill well; the manure therefore intended for a spring wheat crop should be given to the preceding crop of corn or roots. Spring wheat does best on a dry soil when turned in with a light furrow, harrowed smooth, and rolled. The cultivator is a good instrument to cover spring wheat; but on all grounds where there is the least danger of surface water from spring rains, furrows must be made by the plow to conduct it off, as few crops are more fatally injured by standing water than spring wheat.

THE GARDEN.

Though the month of April is too early for much gardening in the open air, still there are many operations which may be advantageously performed, and some seeds should be planted, particularly such as are not liable to be injured by frosts. If the ground is of the nature most proper for garden, or if it has been brought into such a state by skilful cultivation, it will be in a condition in the course of the month to receive some seeds, and be partially fitted for the reception of others. As a general rule, however, nothing is gained by putting seeds into the ground too early in the season, or before the temperature is sufficient to promote ordinary vegetation. Seeds put in early may eventually vegetate, but they rarely produce as vigorous, thrifty plants as those that spring quick and under a more favorable temperature.

Lettuces may be sowed early, and some English gardeners have recommended that a bed be fitted and sowed as late in the fall as possible, as such seeds will appear and grow on the first opening of the spring. We have not found such plants, or those that are self-sown, materially earlier than those grown from seeds planted in the spring on ground fitted for their reception at the time. Lettuce require little attention, other than being kept clean, and when heads are desired, properly thinning the plants for this purpose. All farmers, however, should have a small forcing or hot bed to grow early lettuces, &c. The expense is little, and the value of early vegetables in the family great.

Radishes are a plant that will admit of early sowing, and very desirable for the table. It is not as safe from frosts as lettuce, but if such are apprehended, a covering of matting on these or other similar plants will secure them. A radish bed should be made with horse manure, fresh from the stables, well mixed with good garden mould. While growing, the ground must be frequently stirred and kept loose about them, as well as carefully free from weeds. The more rapid the growth of a radish the more crisp and excellent it of course will be.

Carrots, too, are plants the seeds of which for garden culture may be sown early. The ground must be made fine, and the seeds sown in drills ten or twelve inches apart. The seed must be covered half an inch deep in the earth. Carrots require a deep soil, or the roots will be branched and inferior. Beets require similar treatment with carrots; but it is better to sow the last at different times, as the later sown ones, if matured, will be kept over the winter for culinary purposes the best. Beets and carrots will sometimes shoot up for seed the

first season. When this occurs, they should at once be pulled and given to cattle or pigs, as they are unfit for the table, all such plants being hard and woody.

Onions should be cultivated in every kitchen garden; they must like carrots be sown in drills twelve inches apart, the ground very fine, and the seeds put in shallow, simple covering being all that is required. If manure is used on the beds, it must be thoroughly rotted, and the ground worked fine at least five inches deep. If the seed is good and they are well sown, they are usually up in about a fortnight. We have known a farmer who raised very fine onions, who made his beds early, and let them remain until all the seeds of weeds near the surface had sprouted. He then covered the beds with straw about a foot in depth as evenly as possible, and then burnt it over. The result was a fine dressing of charcoal and ashes, and a complete destruction of all surface weeds or seeds, and such insects as were present. The onion seeds were immediately put in in shallow drills, and the weeds at subsequent dressings were easily subdued. Onions are one of the few things that seem to contradict the theory of rotation. In Scotland they have been grown for more than a century on the same spot, without any diminution of crop; and the experience of the Weatherfield onion growers would seem to prove that a change of location is not best for this plant. In a good soil, onions should be thick in the drill, as they crowd one another from the ground, do not grow as large, and ripen earlier and better than when at greater distances.

A few potatoes may be usually put in the ground the latter part of this month, without much danger of their being nipped by frost; although to risque any considerable quantity would be unadvisable. If planted, it should be done pretty deep, as the plants will take a firm root, and be longer in showing themselves than when shallow planting is used.

Peas should be sown this month, and as they are generally much esteemed, considerable space may be allotted to them. A moderately rich soil is best for peas; in one too rich there will be more vines than pods, and the pea will not be as productive. Garden peas must be sown in drills, covered, 2½ or 3 inches deep; the distance between the rows to be determined by the height to which the kind sown usually grows. Thus the tall Morrowfat should be four feet apart; the dwarf Morrowfat three feet; early frame pea two and a half feet; and the dwarf blue Prussian two feet. There can be no great advantage in sowing many kinds, but some two or three may be advisable. Repeated sowings of the best kinds will secure a continued supply.

Where there is no forcing beds for cabbages, a piece of ground in warm and sheltered situation may be dug up, thoroughly incorporated with manure, and seeds to produce plants for transplanting sown upon it. They will rarely be injured by frosts after coming up, and will be much earlier than if let alone till the usual time of planting. There are many varieties of this plant, and pains should be taken to have a succession of them from the earliest fit for culinary purposes to those intended for fall or winter's use. A late variety of cabbage if sown early, or an early variety allowed to stand after maturity, is apt to crack open and become worthless. This is perhaps more the case with the drumhead, which is the common kind, than any other. The early York, imperial, sugar loaf, &c. are good varieties for the table, and valuable vegetables to cultivate. The cabbage plat is an important part of the kitchen garden, and should receive particular attention.

In this month strawberries, gooseberries, raspberries, and currants should be removed when necessary, trimmed or transplanted, as is required. A strawberry bed is an essential requisite in every garden, and the farmer who loves a supply of this delicious fruit, or does not wish to have his grass lands trampled over by children in pursuit of the inferior wild varieties, will not neglect to allot a part of his garden to this fruit. As a market fruit perhaps there is none equal to it for certainty of growth and profit. A hedge of the common black raspberry on one side of a garden, will furnish a supply of good fruit, in most cases earlier, and by some preferred to the kinds usually cultivated in gardens. Neither, however, should be neglected.

The transplanting of trees is an important part of the operations of the spring, though not strictly appertaining to the garden, except so far as fruit trees are concerned. Few are aware of the value given to a place by having the grounds planted with useful or ornamental trees, independent of the pleasure which every person of taste must feel in their observation. The spring is the best time for the removal of most trees, and transplanting should be performed before the leaves have expanded or the circulation complete, as in such case the quantity of sap required is more than the disturbed and mutilated roots can supply. Trees taken from the forest require more care than from nurseries or open fields. Evergreens must be removed later than other kinds, or the operation is not apt to succeed. The fruit garden is one of the most useful and profitable parts of the farm, when the trees are well selected and cultivated, and particular pains should be taken to secure this result by selections from the best nurseries and varieties.

CURRENTS AND GOOSEBERRIES.

A supply of this valuable fruit contributes much to the comfort of the farmer, and its cultivation should not be neglected. Currants are good made into pies, served up with sugar, the juice may be converted into

wine, and they require little skill or care in the management after planting. In planting them, the buds should be cut from the shoots from the lowest part to several inches above the ground; this will prevent the multitude of suckers or shoots that usually spring up from the roots, and giving a tree-like form to the shrub, enable the fruit to ripen better, and give a better flavor. There are three kinds of the currant grown, the red, white and black. The last is principally cultivated for medicinal purposes; the red is the most common; but we prefer the white, as the fruit is usually larger, sweeter, and has a finer appearance when placed on the table. Red or white currants make one of the richest of jellies, useful in cookery, and valuable for medicinal purposes. A border of such bushes around a garden, while they occupy little space, will be found of essential use, and if not already on the farm, should be introduced without delay.

Several varieties of gooseberries are also known; the larger and more valuable kinds of which have been introduced from abroad. They are, however, more subject to disease, than the native kinds, and are not in general as finely flavored. There are two kinds of the native varieties easily grown, not subject to disease, and great bearers, the smooth and the prickly varieties. The first is a rich flavored fruit but small; the last is larger, of equal flavor, but covered with prickles that detract largely from its value. Gooseberry bushes may be raised from seeds, or grown from cuttings or suckers. They should be produced in such a way as to keep the stem clear from shoots ten or twelve inches above the ground. Gooseberries make a fine wine, the best of jams, and a sweetmeat or preserve of the most delicate quality.

CULTURE OF THE PEA.

Mr. E. Bishop, of Washington co. Md., has requested some information on the culture of the pea—"the best kind for field cultivation—the time of sowing—the quantity of seed per acre—the best mode of preparing the land—the best mode of harvesting—and the best mode of feeding."

The pea is one of the most valuable crops grown in the country, not only on account of its own intrinsic worth, but for its use as a preparation for other crops, particularly wheat. In all our wheat districts it is therefore extensively cultivated, and here as in England is considered next to the root crops as preparative for that grain. The soil best adapted to the pea is one that is good for wheat, and where that grain is certain, peas may be considered so. The preparation of the soil demands nothing peculiar; it must only be made in good order for seed, in the manner required for other spring crops, by being well plowed, harrowed, and if necessary manured. If manured too highly, however, the vine or haulm is apt to be too abundant, and the pea itself inferior in quantity and quality. In this as in most other cases, too great a growth of vine or straw is incompatible with great crops of pulse or grain. Lime in all countries has been found an essential ingredient of pea or wheat soils; and where it does not naturally exist in them, should be applied previous to attempting the culture of these crops.

The kinds of pea most usually cultivated as a field crop, are the small yellow pea and the marrowfat. We prefer the latter; as it is equally certain with the other, is excellent for the table as well as for feeding, is as nutritious for animals, and generally more productive. In some situations, or in exhausted soils, the small yellow pea may however be preferable. From thirty to forty bushels per acre is not an uncommon crop, and this highest amount is often exceeded. The quantity of seed required per acre may be stated at two and a half bushels, although some use only two, and some put on three bushels per acre. For covering the pea the cultivator is a very good implement, as it gives them more earth than the harrow and less than the common plow. The ground should be left smooth by the roller or otherwise, as the ease of gathering is greatly depending on the state of the surface.

In harvesting the pea some farmers hook them up with a scythe, some rake them by hand with the common hay rake, but the most expeditious method by far, is to use the horse-rake in gathering this crop. In whatever way peas are gathered, it is necessary they should be ripe, and of course if very dry at the time, there will be some loss by shelling, but not perhaps more by the horse-rake than by the other methods, and four-fifths of the time required by the two first methods is saved. This, where the land is to be put into wheat, is frequently of great consequence. Once gathered, there is no crop so easily thrashed and prepared for market, as the pea, and few that better reward the cultivator.

There is no plant cultivated which will bring pigs forward more rapidly than the pea, if the feeding is commenced as soon as the peas begin to harden, and the whole plant is fed out to them. When gathered and hard, two methods of feeding have been adopted, both of which are far preferable to the barbarous practice of giving swine the pea without any preparation. The first is to soak and swell the pea in milk if it can be had, if not, in water, and feed it to them in that state. The second is to grind the pea, either alone or with other coarse grain, and feed it to animals in that way. This is preferable to feeding whole, as in corn or any other food, the finer it is made the more readily it will be assimilated, and in all cases if cooked into pudding the advantage will be decisive. In England, where corn cannot be grown, a mixture of peas and barley is consi-

dered superior to any other food for making pork; here, closing the process of fattening with Indian corn, as giving more firmness to the pork, is preferred.

The greatest enemy the pea has to encounter, is the *Bruchus pisa*, or pea-bug, which deposits its egg in the young pea by perforating the pod, and the larva or grub of which remains in the pea till the period of transformation. To avoid this enemy some have proposed to use seed that was two years old, as in this case the seed must be free from the insect. Others have proposed to sow so late in the season as to have the period in which the bug deposits its egg pass before the plant blossoms or the pod forms. To do this the pea must be sown as late as the 10th or 15th of June. The pea is a very hardy plant, little liable to be injured by late spring frosts, and hence when intended to be followed by wheat or required for an early market, they should be sown as soon as the ground can be fitted for their reception in the spring.

NOTICES OF PUBLICATIONS FOR THE FARMER.

THE AMERICAN SWINE BREEDER.

The want of such a manual as the one now before us has long been felt by the farmer, and we are glad the work of preparing it was undertaken by one so competent. Mr. Ellsworth, the writer or compiler of the treatise, is a resident of the Upper Valley of the Wabash in Indiana, with which fertile district of our country his book on the Wabash had made us acquainted. Indiana is the paradise of pigs, if we are to credit the accounts given of the quantities of corn raised there, and the liberality with which the pigs of that region are allowed to feed upon it; and Mr. Ellsworth has turned to very good account not only what may be learned from personal observation with regard to the qualities, habits, and diseases of these animals, but appears also to have consulted some of the best sources of information on these topics, both foreign and domestic.

Mr. Ellsworth has given us a volume of about 300 pages, divided into six chapters that treat successively of the different breeds of swine in Europe and in this country—best means of improving the stock, rules of breeding, and general treatment—stytes, with reference to convenience, feeding, troughs, and making manures—the comparative advantages of raw and cooked food; theory of nutrition, and description of several kinds of apparatus for the preparation of food—best modes of feeding, best kinds of food for making pork, treatment in fattening, killing, salting and smoking—diseases of swine and their remedies, with general remarks on killing hogs and curing hams.

It will be seen from this imperfect notice of its contents, that this volume occupies the whole ground in the growth, treatment, and fattening of pigs; and it is one which we have no doubt will be found very useful to every swine breeder or pork maker in the country. On one point, however, we must caution the American reader. In the modes of feeding recommended from European writers, is one spoken of very highly by Mr. Saunders, that of using *hay tea*. Mr. Burnham of Roxbury, the present season, acting on this suggestion in this volume, has tried *hay tea*, and attributes the loss of some 40 animals of the most valuable breeds to its use, producing an obstinate costiveness, inflammation and death. Mr. Burnham's letter may be found in the New-England Farmer, and an abstract of which will be given in the next number of this paper.

THE FARMER'S INSTRUCTOR—2 vols. pp. 276, 247.

The preparation of these volumes for the use of the American farmer, and as a part of the District School Library publishing by the Messrs. Harpers, was one of the latest labors of Judge Buel, and with the Farmer's Companion, a work written expressly for the Massachusetts School District Library, will establish his fame as an agriculturist and writer, and give him a well-founded claim on the gratitude of every cultivator of the soil.

Although in some degree a compilation from the pages of the Cultivator, the new arrangement of the matter, and the connecting notes, give the volumes all the value that could have belonged to them had they been entirely re-written. In the rich miscellaneous department of these volumes will be found collected a vast amount of practical information on almost every topic of interest to the farmer. It is unnecessary to say that the volumes are got up in excellent style by the publishers, and will be worthy of a place on the shelves of every agriculturist in the country. The addition of such volumes will give the New-York School District Library a character and usefulness it could not otherwise possess.

BLACKLOCK'S TREATISE ON SHEEP.

We have before us the last Edinburgh edition (1839) of this excellent work, and would suggest that a republication of it in a cheap form would be a valuable present to the sheep growers of this country. It is less extensive than the volume published by the London society, but very full and practical in its details, and its arrangement is greatly improved in the present edition. It contains a number of illustrative engravings, relating to this valuable animal and the diseases to which they are subject. The contents of the several parts are as follows: 1st, History of the Sheep; 2d, Wool; 3d, Wool trade; 4th, Improvement of the Breeds; 5th, Management; 6th, Accidents and Operations; 7th, Diseases and their Remedies.

We shall probably have frequent occasions to draw upon the volumes we have mentioned for the benefit of our readers, and have made such arrangements as will

ensure the earliest receipt of all foreign agricultural publications and periodicals likely to be useful.

MAPLE SUGAR.

Perhaps there are few trees in the American forest of more value than the maple, (*Acer saccharinum*). As an ornamental tree, it is exceeded by few; for fuel it is only equaled by the hickory; its ashes abound in alkali, and from it a large proportion of the potash of commerce is produced; and its sap furnishes a sugar of the best quality, and in abundance. Sugar has become not only an object of luxury, but of utility, to such degree that a supply of it constitutes an important article of importation, and is of national consequence. For sugar the world has hitherto relied on the cane, with the exception of some parts of India, where the sugar palm yields it much more cheaply. The sugar cane is, however, a tropical plant, and of course its cultivation must of necessity be limited to such hot countries. France, during the wars of Napoleon, shut out from her India possessions or deprived of them, commenced making sugar from beets, and it proving unexpectedly successful and profitable, it has extended not only over that empire, but nearly the whole of continental Europe, where it forms an important item in their system of cultivation and profit. The manufacture has been attempted in the United States; but though the facts of the case and certainty with which the beets may be grown, and their great value for stock has been fully ascertained, still little progress in the production of sugar has been made. The introduction of any such object of general culture, the history of the cotton and silk business in this country shows must be gradual, and rather the result of individual effort, than combined operations. The whole interior of the northern part of the United States have relied, and still rely, more on their maple woodlands for sugar than on any other source, and as a branch of domestic manufacture and home production, the business is of no little consequence. The time occupied too in the business is very limited, and occurs at a time when very little of other labor can be done.

The process of making maple sugar is very simple and easily performed. The trees must be of suitable size, and within a convenient distance of the place where the operations of boiling, &c. are to be performed. Tapping the trees to procure the sap, is best done with a half-inch or three-quarter auger, penetrating the wood about two inches, and spouts made of alder or sumach inserted to convey the sap to the buckets. When gathered, the sap should be boiled as early as possible, as the quality of the sugar is in a great degree depending on the newness or freshness of the sap. There is a tendency to acidity in this fluid, which produces a quick effect in preventing the making of sugar; and which, when the sap is obliged to be kept for many hours in the reservoirs, must be counteracted by throwing into them a few quarts of slaked lime. During the time of sugar making, warm weather, in which the trees will not discharge their sap sometimes occurs, and the buckets become white and slimy, from the souring of the little sap they contain. In this case, they should be brought to the boiler and washed out carefully with hot water and a handful of lime to each.

In reducing the sap, the great danger to be apprehended is from burning the liquid after it is made to the consistence of molasses, since, when this is done, it is impossible to convert it into sugar; a tough, black, sticky mass of little value being the result. Indeed constant care and attention is required to produce a first rate article; for though sugar may be made in almost any way where the sap can be procured, yet unless the strictest neatness is preserved in all the processes, in gathering and boiling the sap, clarifying the syrup, and in converting the syrup to sugar, a dirty inferior article will be made, instead of the beautiful and delicious sweet which the maple properly treated is sure to yield.

The quantity of sugar produced in a year, varies considerably from the same trees. The cause of this difference is to be found in the depth of snow, continued cold, or a sudden transition from cold to warm, thus abridging the period of sugar making. A sharp frost at night with still warm days, are the most favorable to the sugar maker. Perhaps four pounds of sugar from a tree may be a pretty fair average of seasons generally, although we have known the growth to exceed six pounds, and sink as low as three. A man will take care of one hundred trees easily, during the season of making sugar, which usually lasts from about the middle of March into April, perhaps employing him twenty days in the whole. Dr. Jackson, in his report of the Maine Geological Survey, gives the following instances of the production of sugar in that state.

	Lbs. of sugar.
At the Forks of the Kennebec, 12 persons made	3,605
On No. 1, 2d range, one man and boy made....	1,000
In Farmington, Mr. Titcomb made.....	1,500
In Moscow, 20 families made.....	10,500
In Bingham, 25 families made.....	9,000
In Concord, 30 families made.....	11,000

Fortunately, we are at last to have the statistics of this important branch of domestic industry investigated, sugar being one of the items to which the attention of the marshals employed to take the census of the U. States is to be called, in the agricultural department of their labors. We think the aggregate will be found to exceed the expectations of most of our citizens, and be found not one of the least interesting of those branches of industry belonging to the soil.

SOILS.

The soil, strictly speaking, is that part of the earth's surface, in which the elementary earths, such as silex, alumina, lime, &c. by atmospheric contact, and combination with vegetable and animal matter, are changed into a mass fertile, or capable of supporting a profitable vegetation. It is evident, therefore, that in most cases in uncultivated lands, not subject to the deposition of vegetable matter, the depth of soil must be incon siderable. On lands of a rather porous texture, the soil will be deeper than on those more compact, owing to the greater ease with which the decaying particles of matter penetrate such earths. The depth of soil, and this is a point on which the question of fertility mainly depends, may be considered as depending in the first place on the combination of fertilizing materials with the original earths, by a natural process; and secondly, on the artificial exposure and combination of the earths and fertilizing matters, that take place in cultivation. In a region or on a farm in which the earths are properly proportioned, the soil may be made by skilful management, and very easily, of any required depth; nothing more is necessary than to mingle the proper materials to the desired depth, and the work is done; but such instances are comparatively rare, and in overcoming the obstacles that present themselves to the formation of soil, the aid of science, and the skill of the agriculturist, is most put in requisition.

It is rarely found, that in cultivated lands, the depth of the soil exceeds that to which the plow penetrates; and the farmer, and the best rotation of crops, is the one that most effectually deepens and promotes the formation of a soil favorable to vegetation. A good soil cannot be formed or preserved in which water is constantly present near the surface, nor can such a soil exist where the earths are so porous, and possess so little adhesive power, that the fertilizing materials placed upon it, sink by infiltration beyond the reach of the plant. In the first case the remedy is draining, thorough draining. Without this no effectual amelioration can be accomplished, and when this is done, exposing the earth to atmospheric agency, or supplying the materials in which it may be defective, will make a fertile soil as low as it is moved. In the second case, where there is too little adhesion, the way to convert the earths into soil, is to add such substances as possess this power, and of these clay is the most effectual. In order to determine the precise proportions of the earths in any soil, analysis is requisite; but every farmer can determine whether his soil is too wet, tenacious, or too light, whether sand or clay predominates, and it is on the relative proportions of these two substances, that the easy or difficult cultivation of a farm, or the conversion of the surface earth into soil, depends.

If we suppose that soils suitable for the nourishment and growth of plants, are not usually found lower than the earth is stirred in the processes of cultivation, its average depth cannot be considered more than six inches; as it is believed that more plowing falls short of that depth than exceeds it, and trenching or spading has not been introduced into this country, as a part of field cultivation. Some of our best farmers have, it is true, by increasing the depth at each plowing, brought the depth of soil fit for the support of plants, as low as twelve or fifteen inches, and their crops show the immense advantages derived from the extra range thus given to the roots of the vegetables grown. Parts of Belgium and Holland, which, half a century since, were wastes of drifting white sand, are now the most fertile lands in Europe. The clay necessary to produce adhesion and retain moisture, was found immediately below the sand, and was brought to the surface by spading. A course of cropping, calculated to promote fertility in such soils, has been adopted, and with astonishing effects. In some districts, however, where the sands are unusually light, at the end of each course of cropping, or once in five or six years, spading is again resorted to, though by cultivation, this becomes less necessary, and may in all cases eventually be dispensed with.

A few calculations may assist us in forming an estimate of the quantity of the earths, or the vegetable matter existing in the soil, and the quantities required to render it fertile, when the deficiency is ascertained. Dr. Jackson, as reported in the New-England Farmer, (vol. 18, page 271) gives the following example of calculating the weight of a soil, and of its manure.

"Let the specific gravity of a soil be 1.277—water being 1: then one cubic foot of water weighing 1,000 ounces, a cubic foot of the soil would weigh 1,277 ounces, or 79,187 lbs. An acre of land contains 43,560 square feet area, and if we estimate the cubic foot of soil as weighing 79,187 pounds, or half a cubic foot, at 39,152 pounds nearly, supposing we wish to calculate the weight of an acre of the soil for the depth of six inches, the usual depth of tillage, we have a weight of 1,719,620 lbs. or 859 tons nearly, as the weight of an acre of the soil to the depth of half a foot. If the soil on analysis contain 9 1/4 per cent of vegetable matter, 3.2 per cent being soluble, and 6.3 insoluble, it would give 81 1/4 tons of vegetable matter to an acre of six inches in depth." And the Dr. adds, that, in similar way, by estimating the per cent of lime, silex, clay, &c. in any soil, the weight per acre may be easily ascertained.

If we, with Dr. Jackson, suppose every acre of land to the depth of six inches, as weighing 800 tons, (this is the soil exclusive of stones,) then an inch of this soil will weigh 133 tons nearly; or one ton and one-third of a ton would be required to cover an acre to the depth

of the one hundredth part of an inch. If we suppose a soil to contain 60 per cent of silex, or sand, twenty-five per cent of alumine, five per cent of carbonate of lime, and ten per cent of vegetable matter, soluble and insoluble, then the quantity in tons in every acre of land, to the depth of six inches, of these several substances, would be as follows:

Silex, or sand,.....	480 tons.
Alumine,.....	200 "
Carbonate of lime,.....	40 "
Vegetable matter, &c.,.....	80 "
	800

Repeated analysis shows that a soil constituted in about the above proportions will be a fertile one, and when the quantity in tons of any particular earth in a soil is known, the tons required per acre to raise it to any given standard, can be ascertained at once. Thus, if eighty tons of vegetable matter is requisite to form fertile soil, and analysis shows that it does not contain more than from ten to twenty tons per acre, there can be no difficulty in determining the nature of the substance to be added, or the quantity required. It is very necessary that the amount of vegetable and animal matter in a soil should be understood, as many farmers, if their conduct be allowed to testify, seem to suppose that on an exhausted soil, the addition of ten or twenty tons of manure, is an abundant supply. The same remarks will hold good as to the addition of earths. Thus, on a soil containing eighty per cent of silex in the six inches of soil, twenty loads or tons of clay, mixed with the sand, will add such a per cent to the mass as to render it adhesive and productive. The application of a ton of lime to an acre, though only equal to one-fortieth of that in a good soil, will in most cases, cause a material change in the quality and action of the soil. The quantity of gypsum in soils is still less than that of lime, and a less quantity in proportion to the whole mass, is found to be efficient.

CULTURE OF RAPE.

We are not aware that any efforts have been made in this country to introduce the culture of rape, which in England and on the continent is deemed one of the most valuable of crops, and enters extensively into all their systems of rotation. According to Decandolle, there are two kinds of this plant; one the *Brassica napus*, the one commonly cultivated in Great Britain; and the *Brassica campestris*, the one usually grown on the continent, and according to him, the most productive. In England it is frequently called *coleseed*, and in France and Germany *cobsa*, but in both countries is highly prized for the excellence of the oil its seeds yield, and the value of the rape cake for feeding animals, its qualities in this respect, resembling the oil cake from linseed. According to Decandolle, the *B. campestris* has a rough, the *B. napus*, a smooth leaf.

Rape, as its name *Brassica* indicates, belongs to the cabbage or turnep family, but it never heads like the former, and its roots are of little value compared with the latter, yet it forms an excellent green crop for feeding sheep, and when grown for its seeds, is excelled in profit by few other crops. It is biennial, that is, it requires two years to complete its growth, and ripen its seeds; being sown in July, and perfecting its seeds in the August of the coming year. When used for fattening sheep, the plants are fed off green in the fall, in the same manner as the turnep. According to Loudon, the place which a rape occupies in a rotation, is between two culmiferous or grain crops. "On rich soils it may be succeeded to the greatest advantage by wheat, as it is found to be an excellent preparation for that sort of grain; and by its being taken off early, there is sufficient time allowed for getting the land in order for sowing wheat."

The preparation of the land for rape is the same as that required for cabbages or turneps, and the soil which suits the last will be the best for the first of these plants. It may be sown broad cast or in drills; suffered to stand where sown, or be sown in beds and transplanted, but in any case the ground must be kept clear of weeds, and the plants properly hoed and thinned. The mode of culture is essentially the same as that of the turnep. When grown as food for sheep, it is sown earlier, is fed off by animals on the ground, as the turnep, and wheat is sown immediately after; when grown for seed, it is sown later, and the seed being gathered in July or August, wheat follows.

In Notes on the Agriculture of Germany, by Mr. Carr, an English gentleman, he says the after course is as follows:

- 1 year fallow, well dunged.
- 2 " rape.
- 3 " wheat.
- 4 " barley.
- 5 " peas, light dunging.
- 6 " rye.
- 7 " oats, with rye, or timothy grass seeds, and red clover.

The clover and peas plastered in May. The clover is mown twice for hay, and left two years for pasture, when it is heavily manured, fallowed, and again sown with rape. "The rape seed is sown broad cast in the last of July or first of August. This crop is greatly benefited the following spring by dusting gypsum over it, about one hundred pounds to the acre. In July the seed is ripe, and as the weather is generally fine, is trodden out by horses very expeditiously on large car-

vass sheets in the field. The oil of this seed pressed out, when purified, is without smell, gives a brilliant, clear, burning flame, and is universally used all over Germany, in the saloon of the rich, and the cottage of the poor. The value of the crop is somewhat precarious, because it is subject to so many contingencies; the turnep fly, and caterpillar prey upon it when young, and when in flower, a small beetle (*Haltica nemorum*) often eats away the blossom bud, or lays its minute larva in the petals, ultimately furnishing every seed pod with a maggot which either eats the seeds away, or forcing the pod open when nearly ripe, causes it to fall out. When spared these calamities, it is, however, a very remunerating crop, worth from 10*l* to 20*l* an acre, especially if there is a foreign demand. The straw is generally burned, and the ashes scattered over the field; it is sometimes sold to the soap makers, who prize it highly. Two furrows are now given for wheat sown broad cast in September."

We can see but one serious obstacle to the culture of rape in the northern states, and that is, the rigor of our winters which might endanger the safety of the plants; an obstacle of course that would not exist farther south. That it would be valuable, could it be safely cultivated, there can be no doubt; the oil and the cake would insure such a result. In many instances on good lands, the proceeds of the first crop have more than equaled the price of the land. If any of our readers have attempted the culture of this plant, we should be pleased to learn the result, that we may give it a place in the Cultivator.

BEST COWS FOR THE DAIRY.

"MESSRS. EDITORS—I am a small dairyman, and I am anxious to have the best cows. Those I have at present, are of the common breed, or perhaps a tinge of Devon blood, red and good looking animals, and I have taken some pains in the selection of pretty good milkers. But I find by experience that a good cow may have a poor calf, or in other words, that there is no certainty the progeny of a good milker will possess the quality of the parent. Is there no way to insure such a result, or cannot a cross be given that will give good milkers with a good degree of certainty? I should like to have your opinion on this point; and also on that of the best means of obtaining such a certainty."

INQUIRER."

Experience shows, to make any permanent change in a breed of cattle, is the work of time and skill; and the procuring a breed possessing the desirable properties of being good milkers and having such quality permanent and certain, cannot be expected without calling into action the facts collected by a long series of experiments and observation. That it can be done, the success of Mr. Jacques in the production of his celebrated *cream pot* breed, of which Mr. Coleman has given so interesting an account in his Report on the Agriculture of Massachusetts, proves. Mr. Jacques' animals were the product of the common stock with an intermixture of the best of the breed, for milk of superior quantity and quality, he gave them the distinction they have justly obtained. That the course pursued by that gentleman would be successful in the hands of others, we have no doubt; and a similar process we should recommend for this purpose.

"Inquirer" says his cows are good milkers for common ones. Let him then cross them with full blood Short-Horn bull; and the progeny would hardly fail of being good milkers. Let him continue the process, not of breeding from these crosses, but selecting the best milkers from them, for crossing, as at first, with the pure Short Horns. In this way there would doubtless be animals of the quality required, produced; and in time these qualities would become constitutional, and of course permanent.

We would recommend the Short Horns for this purpose, because their excellence for quantity of milk is placed by the experience and usages of the great dairy-men about London beyond a doubt. Mr. Youatt says that—"The number of cows kept for the purpose of supplying the inhabitants of the metropolis with milk, is about twelve thousand. They are, with very few exceptions, of the Short Horn breeds—the Holderness or Yorkshire cow, and almost invariably with a cross of the improved Durham blood. The universal preference given to this breed by such a body of men, is perfectly satisfactory as to their value, and that on three distinct points." These are, first, the quantity of milk; and as these cows are kept for their milk, the single fact of their being selected by these men of experience, is in itself demonstrative. The second point is the quality of the milk; and though the cream of these cows is a secondary article of profit, yet they are found better even on this point, as a whole, than any other breed that could be selected; and thirdly, as few of these cows are allowed to breed, but are fattened as dried up, the fine beef and its high prices, turned out from these dairies, proves that good milking and easy fattening are compatible with each other.

In corroboration of these statements we may add that many of the imported Short Horns in this country have proved superior milkers, and indicate qualities in this respect deserving of particular attention in breeding. The Rev. Mr. Berry's stock, so famous in England for their union of excellent qualities, were Short Horns, and were as highly prized for their milk as for their superiority in other respects.

DICTIONARY OF TERMS

USED IN

Agriculture and its Kindred Sciences.

ATMOSPHERE. That mass of thin, elastic, and usually invisible fluid, in which the earth floats, and with which that and other bodies are surrounded. The height of the atmosphere is calculated at 46 miles; its pressure on the earth to be equal to that of a column of water 32½ feet high, and on the body of a middling sized man at 32,449 pounds. The density of the atmosphere diminishes in geometrical, while the height increases in arithmetical progression. In all the functions of animal and vegetable life, the atmosphere acts a most important part. It is composed of oxygen and hydrogen, carbonic gas, aqueous vapor, and a minute quantity of hydrogen. In addition to these permanent ingredients, it contains a multitude of other substances, in the form of vapor or gas, varying in kind and quantity according to circumstances, but all exercising more or less an influence on the animal and vegetable kingdoms. Of those that effect the animal, that undetermined something called *miasma*, which produces diseases to such an extent as to render some of the most fertile districts of the globe scarcely habitable, may be adduced; and of those that act on the vegetable, the ammoniacal products, the result of fermentation, may be mentioned. By stirring the earth, the absorption of these atmospheric agents is greatly promoted, and the consequent vegetation of plants proportionably accelerated.

AWNNS. The long bristle-like terminations of the envelop of the kernel in some kinds of plants, is termed the *awn* or beard. It is particularly conspicuous in some kinds of winter wheat, in most varieties of spring wheat, and in all the kinds of barley. Wheat without awns can be converted into the bearded, and vice versa by changing the sowing from autumn to spring, or from spring to autumn. Of all grains, barley is the most liberally provided with this formidable appendage.

AZOTE. A gas, which constitutes the most important portion of the air, and is sometimes called nitrogen, because one of the most essential properties of its base is, that in conjunction with oxygen, it composes nitric acid. Though in itself fatal to animal life, it abounds in animal substances, and forms ammonia with their hydrogen when burned. The great difference between animal and vegetable substances lies in this, the former contains azote, and the latter is destitute of it. Owing to its feeble affinity for other substances, the number of compounds into which azote enters is small, and its influence on agriculture, with the exception of its effect when combined with animal matter, proportionably limited.

BACON. The flesh of swine that has been subjected to the process of smoking over a wood fire, is termed bacon; but the parts to which this term is most usually applied, and which are usually chosen for bacon, are the hams, and the cheeks or jowls. A good ham is one of the most excellent kinds of food, and this goodness in a great measure is depending on their preparation. The kinds most celebrated, are the Westphalia, principally brought from Hamburg; the Hampshire, from England; and in the United States, the Virginia, or southern ham generally. It is not known that there is anything peculiar in the feeding or pickling the Hamburg hams; but their superiority is attributed to the manner in which they are smoked. This is performed in large chambers in the third or fourth stories of buildings, to which the smoke is conducted in tubes from fires of oak or maple chips in the cellar of the building. In passing this distance, the vapor which smoke usually holds, is deposited, and the hams are perfectly dry and cool during the whole process. The Hampshire bacon is made from pork not scalded in dressing, but deprived of the hair by quick fires of straw or other combustible materials. This singeing is repeated two or three times as the case may require, when the hog is cut up, pickled and carefully smoked. These hams are particularly hard and fine, which is attributed to the skin not having been softened by scalding. The Virginia or southern hams, are supposed to owe much of their superior flavor to the animals being allowed to run at large the most of the time of feeding; to their being much in the woods, and wild, giving more firmness to the muscle; and to their feeding much on acorns and other products of the forests. Virginia hams are usually small, the hogs themselves rarely weighing over two hundred; and the pickling and smoking performed in the best manner. The great defects in smoking, commonly are, the hams are to near the fire; and the house is too tight. The hams are in consequence kept too warm from the fire, and the condensation of the vapor keeps them wet. Dryness while smoking is indispensable to good bacon.

BARK. Modern writers on vegetable physi'ogy divide plants into *exogenous* and *endogenous*; in the first of which, the additions that constitute growth are made successively on the exterior side of the parts from which they proceed; and in the last, the growth is the result of additions made internally. The trees of northern regions, such as the pine, oak, and elm, belong to the first class; the trees of tropical climates, such as the palm, cane, bamboo, and all grain bearing plants, belong to the last. The first named trees or plants, only, have a proper bark. In this class of vegetables, every year adds a new layer of wood which is the *alburnum*; and a new layer of bark which is denominated the *liber*. Bark, then, is divided into three parts; the inner layer called the *liber*; the zone of successive outer layers, called the cellular envelop; and the exterior sur-

face of this envelop, which is termed the epidermis. A cross section of the bark of the basswood or elm, will exhibit this structure in perfection. The bark exercises an important influence in preserving plants from the effect of frost, and the alburnum from injury, and cannot be removed without inflicting severe or fatal injuries to the trees. A healthy and clean bark is essential to a vigorous growth; and an occasional wash of soap, lime, or ashes, is found beneficial, when trees are attacked by insects or mosses.

BARLEY. One of the common cultivated grains, in use from time immemorial, and extensively cultivated in modern times. It has a thick spike, with long awns attached to the kernel. It is divided into several kinds; of which the most common are the long eared, or two rowed barley, the square or six rowed, and sprat or battle door barley. The six rowed is most commonly cultivated in the north of England and Scotland, having the reputation of being the hardest plant. In this country the long eared or two rowed has usually obtained the preference; producing a whiter, fairer grain, and smutting less than other kinds. Barley in this country is principally used for malting; in other countries it is extensively used for bread, and for feeding cattle. Barley has met with little favor in this country as food for horses, but there is nothing improper in the grain, as is evident from the fact, that barley is almost the only grain given to horses in the east, where the best and finest horses are found. The difficulty lies in the mode of feeding. Barley is one of the best substitutes for corn in making pork. It requires a rich soil, rather moist than dry; and the ground should be made fine before the seed is sown. From two to two and a half bushels of seed per acre, is the usual quantity allowed.

BAROMETER. An instrument for measuring the weight of the air. Torricelli was the inventor, about the beginning of the 17th century. Torricelli reasoned, that as the pressure of the atmosphere was equal to a column of water about 33 feet high, mercury, which is nearly 14 times heavier, would rise about 30 inches, and the result justified his conclusion. The changes in the height of the column of mercury preceding, or during changes of the weather, have given great value to this instrument, and obtained for it, among common people, the name of the *weather glass*, as foretelling the weather. It is a most valuable instrument at sea; its rapid fall previous to violent storms, putting the mariner on his guard, and since its use has been understood, has been the means of saving many valuable vessels and lives annually. It might be of essential service to farmers; but as yet has not received from them the attention it deserves, as connected with meteorology, a science in which they are so much interested.

BASIN. A term in geology, used to designate a section of country converging to point lower than the remainder, which part is most usually occupied by lakes, swamps, or rivers. Thus we speak of the basin of the Hudson north of the Highlands; that of the Mohawk above Little Falls; or the basins of Lake Erie and Lake Ontario. The best defined basins of Europe are those of London and Paris. The first of these basins is a bed of clay in some places 700 feet in thickness. The basin of Paris is formed of chalk, alternating with limestone, marls and gypsum.

BAULK. Ground left unturned between the furrow slices in plowing, and also strips of ground usually in grass between plowed ridges, as in common field lands. These are the European definitions; in this country farmers give the term rather wider definition, and include the strips of grass land that border plowed fields, and occupied by fences, &c. When fences are removed such baulks are found the richest part of the fields. Few things indicate more clearly the general skill and conduct of the farmer, than the baulks of his fields. The skilful plowman is at once distinguished by his baulks, or rather by the absence of them, except where prevention is impossible. In such cases every precaution is taken to keep them from weeds and rubbish of all kinds.

BEAN. The plants that come under this designation are of two species *Phaseolus* and *Vicia*. To the first belong the varieties of pole and bush beans usually cultivated in gardens; while the last, *Vicia faba*, is the bean known as the Windsor or horse bean, cultivated extensively in England as a field bean, and considered as of great value as food for animals of all kinds. In Europe, the bean is used, mixed either with peas or oats alone, ground into meal, for feeding horses, fattening pork, or even as food for man. It is considered one of the most nutritive kinds of food; but in this country is little used, corn meal being considered a preferable substitute to bean meal, either for man or beast. The prices which are obtained for the common white bean, would seem to render it a proper article of culture on light soils, where it succeeds better than on those of a heavier kind.

BEER. A liquor produced by brewing together malt, hops and water; and when properly made is a nourishing and wholesome drink. Beer is, however, like most of the other liquors of commerce and trade, adulterated to a frightful extent by the introduction of ingredients of a cheaper nature than malt or hops, if not absolutely noxious or poisonous in their effects on the system. The quantity of beer consumed by English laborers is astonishing; especially during harvest, when it is provided by the employer. The greater part of the barley grown in this country as well as in England is made into beer; though the establishments for the manufacture here are on a small scale, compared with the magnificent and expensive ones of that country. If

the good old home brewed beer, from malt and hops, could be substituted for strong beer or whiskey among the classes that consume the most of these drinks, we think the health and morals of the country would receive decided improvement.

BEET. A common vegetable of which there are several varieties, such as the scarcity and common beet of our gardens; the mangel wurtzel or field beet, cultivated for cattle; and the white Siberian beet, grown principally for the sugar manufacture. The mangel wurtzel is a valuable root, producing heavy crops, and being excellent food for sheep, fattening animals, and for milk cows. It requires a rich loam. The manufacture of sugar from beets in its most improved state consists in slicing the roots thin after they are well washed, drying them thoroughly in ovens, grinding them to powder, and then by putting this powder into water, dissolving the sugar while the fibre and the mucilage, which rendered the crystallization difficult, remains unchanged, and is separated from the sweet solution by straining. This is then evaporated, and the syrup crystallized in the usual manner. Beets thus treated yield from eight to ten per cent. For cooking, medium sized beets are to be preferred, as they are found to be sweeter, and less fibrous than those of larger size. Unlike most other roots, beets are fit for use, as soon as they attain a sufficient size; but it does not attain its full perfection till October, and when wanted for winter use, should stand as long as consistent with safety from frost.

BEE. (*Apis mellifica*, L.) A hymenopterous insect, of the family *Apidae*, and well known as the honey bee. The valuable products of this insect, and its singular habits and instincts, have caused it to receive more attention than has perhaps been given to any other, (unless the silk worm is excepted); and the naturalists of Europe, among whom we may mention Reamur, Cuvier, and Huber, have each largely written on this subject. The treatment of Huber is model of such investigation and writing, and though later observation would seem to indicate that on some points he had been mistaken, still his work is likely to remain the standard authority in the natural history of the bee.

There are three sorts of individuals that make up a community or hive of bees. The female mother, or as she usually is called the *Queen*; the males or *drones*, and the *working bees*. These last have been improperly termed *neuters*, since the experiments of Huber show they are females, and may at the pleasure of the community, and by an interesting process, be converted into the prolific Queen of the hive. Reamur asserts that the female in the spring lays as many as 12,000 eggs in the space of 24 days. The product of the bee is of four kinds: the honey, wax, pollen, and propolis. The honey is drawn from the flowers and undergoes little change as is evident from its occasionally partaking of the narcotic or intoxicating effects of the plants from which it is derived. Age usually deprives it of these noxious qualities. The wax is elaborated from the honey by the bee. It is formed between the abdominal rings of the working bees, into plates, and is used for making the combs. The pollen or 'bee bread,' under different modifications appears to constitute a large part of the food of the bees and their larvae; while the propolis is used for lining the hives, closing unnecessary holes, &c. The working bees, and the Queen also, secrete an active poison, which is retained in a small bladder at the root of the stings, and through which it is ejected into the wound by pressure. The Mexicans have a bee, an excellent worker, domesticated like our common bee, but which has no sting, and in its habits is as harmless as the house fly. Several attempts to introduce them into the United States have failed; we believe from their inability to endure the cold of our winters. Mr. Weeks, of Vermont, has paid more attention to the bee than probably any other individual in the United States; and he has in several valuable papers given to the public the result of his observations; correcting errors into which others have fallen, and disclosing many new and valuable facts in regard to their habits and proper treatment.

BEEF. Of all kinds of animal food used, it is believed there is none finer flavored, more easily digested, or more nutritious than beef; certainly there is none more universally used as an article of human sustenance. To have beef in perfection it is necessary that the animal should be well fed; that the beast should be disposed to take on fat at the points where it is of the most value; that the pasture should be clean and free from noxious weeds, or if stall fed, that the substances used for feeding should be sweet, and such as will communicate no unpleasant taste to the flesh; and finally, if salted, that the pickle should be carefully made, containing salt enough to preserve the meat perfectly sweet, yet not enough to harden the lean to the consistence and color of mahogany. Dried beef, properly prepared is an excellent article, and one which should be found among the stores of every farmer. In the tropical regions beef is preserved by being cut, as soon as killed, into thin slices and thoroughly dried in the sun. Such beef in the language of the country is called jerked beef. In some parts of the world, particularly in Abyssinia, beef is eaten raw. At a feast, the animal is tied to the door post; the flesh is cut from the living beast, is served to the guests, the muscles still quivering with life; and the more distinct this action, the more highly is the flesh esteemed.

Died, recently, at Roxbury, Mass., Hon. JOHN LOWELL, a distinguished agriculturist.

Gratuitous Agent at Washington City.

Our thanks are due to the Hon. J. W. ALLEN, M. C. for his friendly offer, contained in the annexed letter, to act as gratuitous Agent for the Cultivator. Members of Congress and others at Washington, who wish to procure the Cultivator for themselves or friends, can do so by applying to Mr. Allen.

"Washington, D. C. Feb. 13, 1840.

"GENTLEMEN—I see in your list of special agents, the names of some gentlemen acting gratuitously. I have heretofore endeavored to render some service to the Genesee Farmer, and thereby to the country, by obtaining subscribers for it. I am now taking three copies of the Cultivator, one sent to my residence at Cleaveland, and two to me here, which I send among my constituents, urging them to send for the paper.

"If you think it will be of any benefit to any body, to put me on the list of *gratuitous* agents, you may do so.

"The work is invaluable, and if every farmer in the land would take it, down to the citizen who has but his half acre, it would be worth millions of dollars annually to the country. Very respectfully,

"Messrs. JESSE BUEL & Co. J. W. ALLEN."

Letter from Mississippi.

To the writer of the following letter, and to the many public spirited gentlemen in various parts of our extended country, who have used their influence to promote the circulation of the Cultivator, we tender our warmest acknowledgments, and assure them that no efforts will be spared by its editors and proprietors, to make the paper every way worthy the high favor with which it has been received.

"GENTLEMEN—Coming a few days ago to the capital of our state, to attend a convention for the purpose of organizing a state agricultural society, I thought I could do no greater service to the highest earthly interests of our state, than to promote the circulation of your invaluable periodical. I have done something, but not so much as I fondly hoped I should have accomplished. I will, however, continue my efforts, and now enclose a check for \$75, in payment according to your terms, for one hundred copies. Our currency is bad, and I have had to receive all sorts of shiplasters, and many have not paid, or I should not have availed myself of your premium for subscribers. All the profit I ask, is the comfortable assurance of doing my duty, and promoting so high an interest as that contemplated by your paper.

"Last evening, according to previous adjournment, the convention met in the Representative Hall. 'The Mississippi State Agricultural Society,' was organized, a constitution adopted, officers elected, an executive and general committee chosen, and all necessary arrangements made to give efficiency to the society—and sir, I hail it as the dawn of better times for Mississippi. Soon, I hope, instead of our being a hissing and a reproach, our state, with her abundant resources and rich agricultural products, will be as an earthly paradise—for I assure you, our soil, climate, and the general intelligence of our people is not surpassed by any people in the United States. Our difficulties are, and have been great, but out of them all, I hope, our energy and industry, and the blessing of a kind Providence, will soon deliver us.

JAMES ELLIOT."

Setting Fence Posts in Stone.

Every farmer is aware the greatest difficulty in making post and board fence, is setting the posts firm enough to resist the action of frosts and winds, that have a constant tendency to lift them from the ground. This is more the case when there is an undue proportion of clay in the soil, than in loose, gravelly soils; and posts in the first instance, will decay sooner than where there is less moisture. What is called the conglomerate rock of geologists, is a mass of clean pebbles cemented together by lime, alumina, and frequently a little oxide of iron; the first being the most important item in the cementing composition. We think this process of nature may be imitated to advantage, in many farming processes, and where the materials are at hand, the making of artificial stone, becomes an important part of the farming business. What is called *pise wall* is a composition of such a nature. Our cobble stone houses which are becoming so common, and promise to be so durable, also belong to this species of construction; and it seems probable, where suitable sized stones abound, such walls and buildings will become still more common.

In building post and board fence, the following mode would doubtless be an effectual way to secure the posts. Let the hole for the post be dug so as to leave from six to eight inches clear space around the post, when placed in the hole. The posts should be the largest at the bottom, and square; and if larger than they generally are, it will be no disadvantage. They should be set at least two feet into the ground. Let materials for a mortar be provided, consisting of water-lime, clean sand, and washed pebbles about the size of a hen's egg. It is absolutely essential that the sand and stones be clear from dirt. One peck of lime, one peck of sand, and one bushel of pebbles may be allowed for a post, though it is evident the quantity must be variable, according to the size of the hole or post. In any event there must be enough mortar to fill the opening completely, and a trifle over to smooth up against the post to prevent water settling around it. The mortar must not be wet, till the hole is ready to receive it. In setting the posts, let a shovel full of mortar first be thrown in, and the

foot of the post placed on this in its proper position. The rest of the mortar composed of the lime, sand and pebbles must now be quickly put in, and if thrown in with some force, so as to drive out all air, and bring the pebbles into contact, so much the better. The operation of filling, and smoothing the surface requires to be done expeditiously, as the mortar sets rapidly; and the posts should not be stirred for some days, as there would be danger of cracking the mass and thus destroying its value. In time this mass would become a genuine conglomerate, firm and durable as the rock itself, rendering it scarcely possible for the posts to be displaced, and if of good materials, little liable to decay.

Where stone suitable for walls are not to be had, farmers must resort to post and board fence as the cheapest and most durable; and any course that shall give greater firmness and durability to the posts, must be of consequence to them. The most durable woods only should be employed for posts, such as cedar, yellow locust, white cedar, red beach, chestnut, &c. and the boards should be put on in the firmest manner; first by nailing the ends thoroughly, and then putting over the place of junction a narrow board secured by spikes or nails made for the purpose. For all common purposes, four boards are sufficient; the bottom one twelve inches wide, and the others eight inches each. These may be placed three, five, and eight inches apart, making a fence more than four feet in height. The cost of such a fence must of course vary according to the cost and quality of materials, and the care used in making; but will most probably in all respects be one of the best and cheapest that can be adopted.

Mr. Lossing's Berkshires.

We have a communication from Mr. John Lossing, a celebrated breeder of Berkshires in this city, on the subject of Berkshire pigs, which will be published in our next. In the mean time, Mr. L. desires us to mention, that he received in October last, four pigs from Reading, Berkshire county, England—two males, and two sows, from different families, for starting a fresh cross; and that gentlemen from abroad, who wish to procure pigs from him this spring, would do well to make an early application.

CISTERNS.

The value of cisterns for rain water is not appreciated by those who have not used them, or who having tried them, have been unfortunate in their construction. For most domestic purposes, rain water is far superior to any other; and where cisterns are properly constructed, and secured against external agents, the water filtered will be found the best of any for cooking or drinking. Cisterns as commonly made are too shallow to keep water at a suitable temperature for drinking, but this is not an essential point in other domestic uses. Cisterns may also be of great use for watering animals where other means are not at hand, and may be made of great use where wells cannot be obtained.—The average depth of water that falls in this country may be set down at 40 inches; of course common barns, or dwelling houses, provided with proper conductors for the water, will furnish an ample supply of water for a cistern of large capacity.

Cisterns, as generally made in the country, are defective; and probably not one in five answers fully the purpose for which it was designed. The grand object seems to be, not to see how good they can be made, but how cheap. The usual practice is, to excavate a hole in the ground, some six feet deep, and about as many in diameter. On the earth sides of this pit, rough as it must necessarily be, a coating of plaster made from water-proof lime and what is called sand, but in reality nothing more than loam, is thinly spread, and the whole covered with plank. The loam has the effect of preventing the mortar from setting; the points of the earth project through the plaster covering so much as to allow water to penetrate through, and render the water within hard, or admit the rain water to escape, and the cistern is condemned. Sometimes it is built up with a wall of small stones, and on these mortar is spread; but in such cases, unless it is plastered over a second time, the mortar sinks from the under side of the stones, and the cistern of course leaks. Bricks are liable to the same objection; but either stones or bricks will make a good cistern, if the proper attention is paid to placing them in the first place and plastering the surface afterwards. If made of the right materials, and in the right manner, a cistern will be as hard and as smooth as a stone jar, and as impervious to water.

In building cisterns, as in everything else, what is once well done is twice done, so far as trouble, expense and utility are concerned. Too much pains or care cannot be taken in the selection of materials, as if well made, a cistern will last for centuries. The lime should be good, whether common or water-proof is used, the sand clean, sharp and coarse, and the mortar should be mixed and used without delay. Stinting the quantity is very bad policy, as in all such cases it will be found, the thicker the wall the firmer it will be.

What is termed "concrete," is a mixture of lime, sand and pebbles, in the following proportions:—Pulverized stone lime, not slaked, one bushel; clean sand one bushel; small stones, clean, none larger than a pigeon's egg, four bushels: the whole well mixed together dry; then wet so as to be like mortar, worked over a few times with a shovel, then quickly thrown into the place where it is wanted, not to be disturbed

afterwards. Water-proof lime ground would be the best, fresh and caustic, but common lime prepared as above, will make in this way a wall solid as stone itself. In making cisterns of this material, the wall is usually formed as much as eight inches thick, and where it is large, twelve inches. The pit is first excavated with reference to the quantity of water required, and the deduction to be made for the thickness of the wall. A covering of the proper depth, made as directed above, is placed over the bottom. A tub made of boards in such a manner as to resist some pressure, and at the same time admit of easy taking to pieces and removal, but without a bottom, is now placed in the pit, standing on the concrete, and leaving a space around it of the thickness intended for the wall when finished. The materials, as above proportioned and prepared, are thrown into this open space, until the mass is brought to the surface, or as high as is desired. The whole is now left for some days, for the wall and bottom to set, when the boards are taken out, and a first rate cistern is the result. It may or may not be plastered on the inside; the cistern will look better, but the actual improvement is trifling. The top must be secured by timber and planks, with a covering of earth that will exclude frost, a pump provided; and if the conductors are well arranged, there will be no want of water.

The cost of a cistern will of course depend on the ease with which the materials can be procured, and the nature of the excavation. The quantity required in bushels, to fill the space around the tub, may be easily calculated when the thickness of the wall is determined on, and a full supply of materials should be at hand before the mixing commences. An allowance of about one-fifth must be made for shrinkage in the mortar while setting, and of course this extra quantity of materials, in lime, sand and pebbles, must be provided for. In many places, rain water is the only water to be relied on, and cisterns in such places are made on great scales. Buenos Ayres is one of these. It has been remarked, that when people once become accustomed to rain water for drink or for cooking, they can with difficulty tolerate any other.

ORCHARD GRASS.

Of the grasses cultivated for meadows or pastures, on moist but not wet land, there are few more valuable than the orchard grass, (*Dactylis glomerata*.) It is a very durable plant, springs early, grows with great rapidity when mown or fed off, continues green late in the season, makes an excellent hay, and as pasture, is much relished by all animals. It is particularly valuable as a grass to sow in orchards or woodlands, from which the under brush has been cleared, as it thrives well in the shade, and by occupying the ground in such places, not only furnishes good pasture, but excludes weeds that would otherwise take possession. A mixture of clover, orchard grass, and timothy seeds makes good mowing or pasture; the two last spreading and occupying the ground as the clover dies out. Where the orchard grass is used alone, more seed should be put on than is generally used, as if thin it makes large tufts, and will not mow or feed as evenly as when growing closer. Where frequent rotations of grain crops are practiced, as in some of our wheat growing districts, orchard grass would not be equal to clover, and indeed nothing could be substituted for that grass, for alternating with wheat. Orchard grass seed is quite bulky and light, a bushel weighing under twenty pounds, and hence those unacquainted with its appearance and use, generally but imperfectly seed their land. We have made considerable use of this grass in mowing and pasture, and think it well deserves the encomiums passed upon it in England, and in the best agricultural districts of Pennsylvania.

BEES—INQUIRY

"MESSRS. EDITORS—Can you inform me of the name of the best work on bees; and of the place where it can be procured. I have paid some little attention to them, and should be glad to learn more, as their habits and instincts are truly wonderful; and I am convinced when properly managed, they are a source of handsome profit, and little expense." APIARIAN."

"Monroe, Michigan, 1840."

John M. Weeks' "Manual, or Easy Method of Managing Bees," is one of the best works on the subject published in this or any other country; and shows a knowledge of this valuable little creature, not equaled or exceeded by any writer since Huber. Mr. Weeks' hive, called the "Vermont Hive," is probably equal to any other hive; and we have observed apiaries where this hive has been used with the most complete success. We are of the opinion, however, that where circumstances are favorable, rooms of the garret, or even buildings on the earth, when properly made and secured, where the bees can multiply and work without swarming, and where the honey is of easy access without injury to the bees, are to be preferred. The moth that is so destructive to the single hive, is not as seriously felt in these large masses; and the trouble bees occasion in swarming, almost the only one they do occasion, is avoided. Their lives too can be safe, and the barbarous practice of killing them to get their stores, is prevented.

Mr. Weeks' book, or pamphlet, of which four editions have been published, may, we presume, be found at most bookstores, and should be in the hands of every man who has the care of bees.

Communications.

Management of Sheep—No. 10.

MESSRS. EDITORS—In my two last, I treated of matters very essential to the welfare of sheep during the winter season; and it is to be hoped that, sooner or later, farmers will learn that it is an axiom, that as the comfort and welfare of their domestic stock is promoted, in that ratio will be their profits.

My present chapter will embrace that which differs not materially from the practice of thousands of wool growers, yet, varying very essentially from the great mass of farmers—consisting off order, full feeding, and regularity of feeding.

As regards economy, I am very willing to concede that I may be behind many others; but this matter will be discussed hereafter—here stating, however, that I am governed, as regards materials for feeding, as many others are, by circumstances; which when made known, your readers will perhaps admit that I am not far from the right path. Agriculture, by means of societies for its promotion, is making rapid strides in this country towards perfection; and there is no branch of it, perhaps, in which greater improvements have been made than management of stock. Still, there are many errors to reform, and much yet to learn—especially in regard to sheep husbandry. I am satisfied that the declaration made in a former number of this series, namely, that management of sheep, with a view to the greatest profit, is comparatively in its infancy in this country, is true to the letter. This remark, however, is intended to be general in its application, not doubting but there are many instances where the highest point of economy has been attained, and thereby the greatest amount of profits realized. But lay not the "flatteringunction to your souls," that even one of you has reached this point. I am free to confess that I have not, and the communication of your correspondent "Niagara," in the January number, has fully confirmed me in this belief. No, it will never answer for any man to settle down in the belief that he has attained the point of perfection in any thing; for surely as he does, he will either not advance at all, or begin to retrograde. We ought to be willing not only to make some experiments ourselves every year on a small scale, and make the result known through agricultural papers, but adopt the successful experiments of others. For my own part, I have adopted one of the *improved*, as well as *approved*, methods of management of sheep, in regard to protecting them from the terrible storms of winter. It was with me, at first, an experiment, although having so much true philosophy about it, it could hardly be termed such. It was successful, and ever despising a spirit of selfishness, I have, irksome as it truly has been, communicated all the advantages resulting from it, through the columns of our farming publications, that others might be benefitted likewise. Now, if I have not offered in former chapters, reasons and facts enough to convince all on this point, let such as are yet sceptical, go to work and experiment on a small scale. If they have a hundred sheep, let them select twenty-five of them, embracing all ages; let the sheep be marked, and also their progeny, and be kept entirely separate from others; and at the end of two years, provided they adopt the course of management I have heretofore, and hereafter shall recommend, in all respects, if every position I have taken is not fully confirmed, let them come to me, and the trifling expense incurred for hovels shall be reimbursed. But they will nail it no lottery business.

With a view to method, I shall begin with my mode of treatment of lambs.

It has been stated in a former chapter, that at the time of rearing, they are divided into flocks, varying in number, from one hundred to one hundred and twenty-five; a larger number herding together being deemed incompatible with their welfare. About the first of November they are yarded, and graded as to size and condition; and, also, the flocks reduced to about one hundred each. This matter of grading should always be attended to by every farmer; for, although he has not more than fifty or one hundred lambs, there will always be few, either from diminutive size, or low condition, which require to be separated from the larger and stronger, and extra care bestowed upon them; by neglect of this, formerly, my losses were considerable. At this time, too, there will be found some which need tagging; that is, the filthy locks cut off: this, if not really necessary, yet is indispensable to good appearance. For, what looks more disgusting, or sounds worse than clattering ding-balls: thunder to my ears is music in comparison. The two or three old sheep which were put with each flock at the time of weaning, to tame and facilitate changing from pasture, are allowed to remain with them, for the purpose of learning them to approach the troughs and eat grain, which, at about this time, I begin to feed. Use is made of oats, and only about two quarts to the hundred is given for several days; which should be scattered so thinly as to reach the whole length of the troughs. This quantity is not enlarged for a week or more, by which time nearly all will have got a taste, and acquired a fondness for them; after this, the quantity is gradually increased to half a bushel, and this amount is continued to be fed, daily, until about the first of January.

Here I deem it necessary to give my reasons for beginning thus early to grain my lambs, with some other

remarks, which I hope will not be thought prolix or digressive.

It is the practice of the great majority of farmers, to allow their sheep to run upon the fields in the fall, without hay or grain, as long as the ground is uncovered with snow. This is decidedly wrong, and should be often adverted to by you, Messrs. Editors, in terms of strong condemnation. The grass, it is generally conceded, after repeated freezing, loses much of its virtue to nourish, and, ceasing to grow, the pasture becomes ground into the very earth; and, therefore, sheep cannot obtain a sufficiency to keep up their good condition, without the addition of a little hay given once a day, or grain. The diminution of flesh may not be very apparent, yet, depend upon it, they are all the while losing stamina and strength; and so well satisfied am I of this, from experience and observation, that I consider a late fall rather an evil, than good, to the generality of farmers, so far as their stock is concerned. I have expostulated frequently with farmers on this subject, and have been told by some of them, that they did throw out hay to their sheep, but they refused to eat it; but on further investigation it proved to be the *tops* of their stacks, something not worthy the name of hay, and no wonder the sheep rejected it, preferring the decaying grass to such trash. Here, by the way, is a confirmation of my remarks in reference to the utility of barns, made in my last: for there is no time in the month of November, that my sheep refuse to eat barn hay; and this arises not from any greater deficiency of pasture than is usual on all farms at this season. I respectfully conjure you, my brother farmers, to reform in this matter altogether. Begin by the middle of November, or earlier, if necessary, to either grain all your sheep a little, or give them a small quantity of hay: let it be good, and they will be certain to eat. Do not think by withholding either, or both, that you are practicing a piece of economy. Verily, Messrs. Editors, I am not a believer in *man ghosts* in these matter-of-fact days, but if the ghosts of departed sheep were permitted to walk the earth, to tell the whys and wherefores they were sent untimely out of this "breathing world," many would shake their woolly locks at us, and say, "we did it," by half starving them in the months of November and December. Peradventure any should appear, I believe, at least, that the ghost of a sheep is an "honest ghost," and may be fully credited if it charges against farmers the crime of inattention and inhumanity.

About the first of January, by which time the season is so far advanced that lambs will eat hay with avidity, I suspend feeding grain to several of the best flocks, and to these it is not resumed regularly until the first of March or thereabout; after which, it is not remitted till the foaling season expires. With the inferior flocks there is no interruption, but receive daily their half bushel of oats up to the time they are turned to pasture. When this period arrives, some twenty or more, as the case may be, of the most inferior are selected, and these I continue to grain until about the first of May. This will generally be found necessary in all large flocks. During the winter, should there be any among the better flocks which are declining in flesh, they are immediately taken out, and put with the inferior, as these, of course, receive extra attention and care throughout the season. This last point should never be disregarded; and it is equally applicable to grown sheep.

It will be well here to remark, that I consider it unsafe, and therefore unwise, to grain sheep in the morning on an empty stomach, for the reason that all kinds of grain are more or less stimulating, and will therefore be very apt to induce purging, especially with lambs. If it produces not this effect, it will engender a kind of fever producing an action on the pelvis, which causes the wool to drop from it. My practice is, always to feed grain in the middle or latter part of the day. But a contrary course, adopted by many farmers, as well as feeding too much at a time, has laid the foundation of the prejudice which they entertain against oats as food for sheep. But there is another cause of their prejudice. Many allow their sheep through mismanagement, to get pretty near the bottom of the hill, before a step is taken to bring them back; and too late they attempt to restore their emaciated condition, by giving oats or other grain. As I have before observed, grain is stimulating, and in proportion to the quantity fed, and its effect upon a poor sheep, if suddenly given in too large quantities, is like a bowl of rich turtle soup, or other very highly seasoned food, to a man in the last stages of the consumption. To show that oats is, like much else in this world, a good thing, I will state the fact, that I commenced the winter with five hundred and thirty-five lambs, and up to this time, (21st Feb.) have lost but two; both of which were mortgaged to the crows before foaling season commenced: and furthermore, from a particular inspection this morning of all the flocks—and my lambs received my personal attention exclusively—I found not one affected with scours, neither have more than a half a dozen been so, any time this winter. I will further say, that if good condition, and the life and elasticity of deer be a guarantee against loss, not more than one or two more will go over the dam this season. In my next I will introduce a table, the result of actual experiment, will show that oats stand third in nutriment of the various grains, as well as something else, to prove that, if fed at all, nothing is cheaper.

That something more than hay is requisite for lambs, and young stock in general, would, in these enlightened

days, be folly to deny. The truth is, we cannot begin too soon to lay the foundation for vigorous constitutions; and if there is any virtue in grain to promote this, it should not be withheld. Very many farmers are too short sighted in their calculations. They sacrifice large prospective profits to small immediate gains. They sell all their grain of every kind, and allow their young stock to take it rough and tumble through the first winter of their existence, and the consequence is, a stunted, unthrifty, and short lived race. Management like this has caused the domestic animals to look as they do, on three-fourths of the farms of our widely extended country. The splendid Durham, the Leicester, and South Down sheep, and Berkshire hog would degenerate sooner from this disgraceful cause, than any other. Out upon such short sighted, parsimonious management. Feed twenty-five cents worth of oats or other grain, to each of your lambs, and it will be returned to you at the end of five years, forty times over, by a harder constitution, greater size, more wool, more vigorous and numerous progeny, and longer life. If there ever was a truism, this will be found one.

My best hay is always appropriated to the lambs, which is fed to them in box racks—a description of which will be found in my next. When the weather is very cold, hay is given three times a day: the second feeding, however, is very light, as in the middle of the day they are grained. The troughs, varying from some I have seen, and more economical, will be noticed hereafter.

I have now given an outline to your readers of a mode of management with respect to lambs, with reasons, also, and facts to show that it is entirely successful. I have written hurriedly, and if any thing essential has been omitted, it will be supplied in my next, which will "positively be my last appearance" on the subject of *winter management*. L. A. M.

Lansing, Tompkins co. N. Y.

A New Variety of Sheep.

MESSRS. EDITORS—The opinion seems to have become general within the last few years, that wool of the finest quality cannot be grown so profitably, as that of a medium grade. The reasons are, that the fine woolled sheep (Saxons) carry lighter fleeces, require more protection as well as extra food during winter, rear fewer lambs, are smaller in carcass, and are slower in arriving at maturity than some of the coarser varieties; and the increased fineness of their wool does not compensate for these deficiencies. It is also notorious that our manufacturers do not make any thing like a just discrimination in prices, between medium wool and that of the higher grades.

It is not necessary here to discuss the question, whether the defects of the Saxons, such as we find in this country, are inseparable from this breed of sheep. My own opinion is that they are not, at least to their full extent, and I have so expressed myself on former occasions. Candor, however, compels me to admit that my opinions in relation to this breed have undergone some change. But whatever may be the inherent defects of the Saxons, there can be no doubt that their reputation has suffered less from these, than from the gross frauds practiced in their introduction into this country, and the subsequent mismanagement of our breeders. A detailed statement of the several importations of them which took place between 1824 and 1828, (the epoch of the Saxon mania,) has been made public, in which the fact is disclosed, that a large portion of the imported sheep were not pure, and, in many instances, scarcely half blooded animals. In language used on a former occasion, "our country was flooded by eager speculators with the grade sheep and refuse Merinos of Germany. Fineness of wool during the period of this strange excitement, was made the only test of excellence, no matter how scanty its quantity, no matter how diminutive or miserable the carcass." The same views unfortunately continued to influence our wool growers. The legitimate consequences of breeding with reference to a single point, (fineness of wool,) to the exclusion of all others, were soon apparent. While there are many individual exceptions to the remark, many men who have kept up and even improved the quality of their flocks by a more judicious system of breeding, it will not be denied that the mass of American wool growers, have suffered their Saxons to become as we have described them, light fleeced, feeble constitutioned and diminutive sheep.

The question then has arisen, with what breed shall their place be supplied? Many have turned their eyes towards the "old fashioned Merinos." This undoubtedly was a very valuable race of sheep, but not without their defects, and these of a serious if not a decisive character. It is known to all that they spring from the same common stock with the Saxon, or rather they are the parent stock from which the Saxon descended, and possess, with greater or less modifications, the same distinctive traits. The fleece of the Merino, quantity and quality being taken into the account, is perhaps as near the standard, in which the greatest profit is to be found, as that of any other variety. It is of a quality the most saleable, and which brings the fairest remunerating price in our American markets, and any improvement in its fineness, accomplished by breeding, is usually, if not inevitably, accompanied by a counter-balancing diminution in quantity. But the Merino, like the Saxon, is slow in arriving at maturity—is decidedly deficient in the points which constitute a good mutton

sheep; and is, though not perhaps to the same extent with the common Saxon, a poor nurse.

A variety carrying a fleece similar to that of the Merino, but more resembling the coarse woollen breeds in those points where the Merino is defective, would be the desideratum of the American wool grower. Can such variety be produced? Probably it would be impossible to retain to their full extent, in cross, the perfections of the coarse and fine woollen races. But I believe an approximation to it can be made. I believe that a variety can be produced with a fleece closely resembling the Merino, and perhaps equal to it, with the size of the carcass, aptitude to fatten, &c. very decidedly improved. I shall proceed to state the result of some experiments, on which I have founded the foregoing opinion.

At the annual fair of Otsego, several years since, I saw some lambs which were a cross between the South Down and the Merino. Their wool was even, but perhaps hardly fine enough for the purposes of the wool grower, and they inherited much of the unsightly throatiness of the Merino. The *evenness* of the fleece, however, which is usually lost in interbreeding between fine sheep, and those of larger and coarser varieties, induced me to hope much from a South Down cross engrafted on the fine woollen stock. The Down, as is well known, cannot be excelled in those points where the Saxon and the Merino are most defective. It is moreover an upland sheep, and will bear hard stocking, qualities in which it resembles the fine woollen race, and which fits it for the purposes of the wool grower. Its wool, which in length belongs to the middle class, is compact and even, and in fineness ranks about as follows:

Diameter of fibre.	Serrations in an inch.
S. Down,	6/10 of an inch, - - - 2,080
Merino, " "	- - - 2,400
Saxon, " "	- - - 2,720

It will be seen that the South Down wool approximates almost as near to the Merino, as the Merino does to the Saxon. The first cross therefore between the South Down and the Saxon would give wool of a quality near that of the Merino. The second cross (breeding towards the Saxon) would give a wool equalling or exceeding the Merino.

I have tried the experiment, and the event justifies these conjectures. I enclose four specimens of wool from lambs one-fourth South Down, two bred with pure Saxons, and two with sheep in which the Saxon and Merino was about equal. You will perceive that they are already three inches long, and of the quality I leave you to judge. I will only say that No. 1 and 3, (bred with Saxon) would not suffer much by comparison with any Merino wool I am acquainted with. No. 1 and 2 are from bucks which have run with fifteen ewes apiece, have received no grain, and yet are in first rate order, and are fully as large as Merino yearlings. The fleeces of all I have, are extremely compact and heavy. The one-fourth bred lambs were much larger when dropped than Merino or Saxon lambs, and evidently much stronger and harder. I left out several exposed to the weather the first night after they came, which was a cold and stormy one, and in which Merino or Saxon lambs of the same age, would certainly have perished, and in the morning every one was alive and active.

I prefer the Saxon cross, because, independent of the superiority of the wool, better forms can be obtained, and the coarseness about the head, and throatiness, peculiar to the Merino, are avoided. But the largest, strongest, and best breeding ewes should be selected to couple with the South Down ram. The produce, even in the second cross, (one-fourth South Down and three-fourths Saxon,) so far as my experience goes, are a decidedly hardy sheep, sufficiently so to withstand a winter in this climate, without shelter, or any other food than hay. This being the case, the increased fineness of their wool gives the one-fourth bred the preference in my opinion, over the full-bloods.

If this new variety of sheep can be established and perpetuated, I am sanguine in the belief that it would form a breed peculiarly adapted to the wants and interests of the wool grower. Here, however, undoubtedly, is the main difficulty to be encountered. The attempt to perpetuate a cross by breeding directly among themselves, is contrary to theory and sound experience. But a rigorous system of selection may do much. If necessary, reject thirty or even fifty per cent of the increase until the desired points are found to be stamped on them with sufficient certainty. The time and expense attending such a process among larger and slower breeding animals, such as the horse and cow, has probably prevented its ever having been tried among them to the extent here advised.

At all events, I think the experiment worth trying. Should it fail, the South Down blood thus introduced into our Saxon flocks, cannot but be a most renovating admixture. Even the uncertainty of breeding uniformly good animals, is preferable to the *certainty* of breeding uniformly bad ones. Yours, &c. H. S. R.

Cortlandville, Feb. 7, 1840.

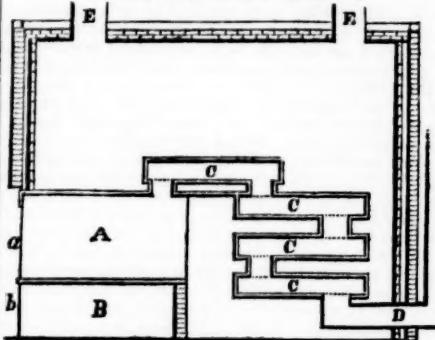
To Dairymen or Dairywomen.

Can some of our obliging correspondents among this numerous class of your valued patrons inform one of your constant readers about the average quantity of milk, (from a fair run of cows,) required to produce a quart of cream, for four equal periods of the year: 1st

period embracing the months of June, July and August; 2d period, September, October and November; 3d period, December, January and February; 4th period, March, April and May? Also, the best method of producing a large quantity of cream from a given quantity of milk.

AGRICULTURE.

Hot-Air Furnaces.—[Fig. 34.]



I have repeatedly been asked for information respecting hot-air furnaces, and as summer is the time for their erection, perhaps a short description will not be unacceptable.

Permit me to speak very briefly of their advantages, alluding of course, to the mode of construction here described. Fuel is a large item of expense in every family, and is becoming still more so. We know many farmers who annually consume, in warming the different rooms of their houses, as many as fifty cords of wood, and some much more. We cannot alter the quantity of heat which a given quantity of fuel throws off in combustion, without altering its nature; but we can adopt means to save this heat, and apply it to warming our rooms. Experiments have shown that by the use of a common brick fire-place, the owner pays *nineteenths* of the cost of the fuel for the privilege of heating the air above the top of his chimney. The hot-air furnace is the best thing, by far, that we have seen, for saving fuel. A neighbor has kept several rooms of his house warm night and day, through the past winter, by means of one, and from his experiments it is clear that it will not require *ten cords* of wood for the whole year.

Another important advantage, is keeping up only one fire for several rooms. As the wood is burned large, it saves much labor in cutting, and needs replenishing once only in five or six hours. Another advantage is the house-room saved, none being occupied by stoves or fire-places. Another is the prevention of dirt, the universal accompaniment of fire-places. It also renders all the rooms warm in the house, by night as well as by day, imparting to them the peculiar and comfortable warmth of the air of summer. It is safe—children do not burn their fingers, and if rightly constructed, the house is far less liable to take fire. And by no means a small consideration to the person who loves the *culture of flowers*, and who cannot afford the expense and care of a green-house, tender plants may be kept in any of the rooms, without the least danger of their being frosted, and with no other attention than that of watering.

The hot-air furnaces commonly erected in cities are on an entirely different plan, and, in my opinion, greatly inferior. The one here described is the result of many experiments, and is the best form of several which have been tried. It was designed by William R. Smith, of Macedon.

A, fig. 34, is a longitudinal section of the stove, for the reception of fuel. It should be large, to admit large sticks of wood, so as to lessen the labor of cutting, and to cause the fire to burn long without renewing. Three feet in length is not too much. The bottom, instead of being a plate, is a grating, made of cast iron bars, running lengthwise with the stove, supported at the ends and in the middle by cross bars. Through this grating the ashes fall into the ash-pit B. The advantages of this are, the wood burns more freely, the fire need not be interrupted to remove the ashes, and the ashes are much better in quality, as they contain no mixture of charcoal. The doors, a and b, of the stove and ash-pit, should, if practicable, shut very closely, for the better regulation of the draft, as the fuel will burn slowly for a long time when desired, as for instance, during night and in mild weather, when the draft is nearly closed. All the air admitted to the fuel, should be through the ash-pit door.

C, C, C, C, are four flat, square, cast iron drums, connected by short cast iron pipes, and through which the smoke passes to the smoke pipe D, from which it escapes into the chimney, or passes out into the open air. As the smoke thus becomes much cooled before entering the pipe D, the soot accumulates more rapidly, and hence this pipe should be as short as practicable. It should, however, have some height to cause draft, or should enter a tight small chimney, for the same purpose. The drums should have small openings for cleaning. They are supported by bricks not shown in the figure, to prevent confusion.

At a short distance from this apparatus, a double brick wall, with an included plate of air, is built around the whole. It is covered by a layer of bricks, supported by iron bars, and on this a layer of four or five inch-

es of ashes, covered again by brick, mortar or boards.

It will be observed, that the greatest part of the heat of the burning fuel is thrown out from the drums, and heats the surrounding air; this heated air is confined within the brick air chamber, until it escapes through the air-pipes, E, E, into the rooms above. The object of the double walls, is the more perfectly to confine the heat, and to prevent its escape through any other channel. Probably if the included space between the walls, were several inches in thickness, and filled with dry ashes, or still better, with powdered charcoal, this would be more completely attained. If the inner wall is occasionally braced by a cross brick to the outer, it need be only two inches in thickness, or composed of bricks on edge.

The furnace should be built in a room in the cellar, entirely devoted to the purpose, and a window left open for the admission of fresh air to the chamber; or if this cannot be done, a trunk or pipe one foot square, should lead from without through the wall to the chamber. In the former case, several air holes, four inches square or more, should be made at the bottom of the chamber.

On one side of the chamber, should be two double sheet-iron doors, for admission in cleaning the drums, &c. and sufficient space for this purpose should be allowed between the drums and the walls.

The pipes E, E, through which the hot air escapes to the rooms above, should be of bright tin, and as nearly vertical as possible, and from eight to twelve inches in diameter. The larger they are, the less the temperature of the air chamber need be raised to heat the rooms above, consequently less fuel is required, and the cast iron will not burn out so soon.

In the seventh volume of the Genesee Farmer, is a description of a furnace somewhat similar; but the drums are there placed in succession *above* the stove. In the present plan, the descent of the smoke causes it to throw out its heat more completely; and as the last drum is the lowest, the coldest and freshest air comes in contact with it, and the smoke passes off at a lower temperature than that of the air in the upper part of the chamber. But great care is necessary to have the drums tight, to prevent the escape of smoke into the chamber, and for this purpose the cracks at the joints should be stopped with a paste made of iron filings or turnings mixed with sal ammoniac and water.

The expense may be diminished by substituting sheet iron for cast iron for the two last drums.

Circular brass or iron grates, turning on the center, placed in the floor of the room, over the air pipes, E, E, regulate the quantity of hot air admitted.

This method of warming houses has been found preferable in point of health and comfort, to any other; and the only objection appears to be, we do not have the cheerful “blazing hearth” to gaze at. But habit, which created our desire for this, will soon remove the difficulty, and most will learn to prefer a book, a picture and a stand of fine flowers in winter, to blazing sticks, smoke and a heap of ashes.

Should any one wish further information, I would communicate it with pleasure, through the columns of the Cultivator.

Very respectfully,
J. J. THOMAS.

Macedon, 3 mo. 1840.

GOOD CROP OF WHEAT.

MESSRS. GAYLORD & TUCKER—As I frequently see notices of extraordinary crops recorded in agricultural and other publications, I am induced to send you an account of a crop of wheat raised the past season on the farm of Mr. Jacob Kirk, of York county, Pa.

In the fall of 1838, I sowed three acres of ground to wheat, using one and one-fourth bushels of seed per acre—the varieties sown were the Orange Bearded (so called here,) and the Blue-stem, a variety preferred in this section to many others, of bald wheat. The yield produced by the above three acres, was one hundred and twenty-eight bushels; or forty-two and two-thirds bushels per acre. No difference could be observed while growing, between the two varieties, neither was there any perceptible difference in the yield, but the Bearded unquestionably makes the most flour, being larger in the kernel, and the flour being whiter than that of the bald.

This wheat was sown between the 3rd and 8th of October, on a soil which I supposed would be called alluvial—what we here call red-laden soil, having red shale for its basis, and which twelve or fourteen years ago, was so completely worn out that it would scarcely reproduce the seed sown upon it. It was then purchased by Mr. Kirk, who commenced the following system, of “rotation of crops,” with this worn out piece of land. First year, rye; second, corn; third, fallow; fourth, wheat, with manure, when it was likewise seeded to grass, (clover and timothy;) fifth, mown; and sixth, grazed, when it was again broken up and sown with rye and the same system as above again pursued. This system has been but twice gone through with since Mr. Kirk became the owner of it, and has with two ordinary manurings produced the above mentioned crops—but the cause of its fertility is supposed to lie in this, that Mr. Kirk has his barn so constructed with sheds that his manure is always in the dry, and when carted to the field is immediately plowed in; and the wheat immediately after sown upon it. I have now no method of ascertaining what quantity of manure was applied to the last crop, but it was certainly not an extraordinary quantity. I do not send you this as a brag crop, but merely to show what manure will do, especially when kept in

the dry. I am candidly of opinion that it is worth fifty per cent more than when exposed to the weather.

Respectfully yours,

ROBERT FOSTER.

P. S. I might here observe, that the above piece of land has never been limed, and that the manure used was barn yard manure, together with what ashes were made about the premises.

Lewisberry, Pa. March 3, 1840.

Durant's Report on the Culture of Silk.

(Concluded from page 33.)

Silk is now cultivated in twelve or fifteen states of the Union. The quantity produced is yet small, probably not exceeding 20,000 pounds; of which Connecticut furnishes a very large proportion. In most districts the business is new; those engaged in it are laying the foundation for a much greater yield.

The climate from our southern border, up to 42 or 44 degrees north latitude, is in all respects suitable for the silk culture. As an auxiliary branch of farming, the feeding of silk worms is as profitable as feeding of poultry, and the silk will find as quick and ready a market as poultry. Both are deemed indispensable to the comfort of society, and will be consumed at any price. Both are profitable when conducted as collateral branches by the farmer, and both, or either one, when raised as an exclusive business, are not profitable, but ruinous, even at the lowest rates of labor in this country. With the long tried experience of Europe, and the low price of labor in that country, the whole continent does not furnish an instance of profitable silk culture, conducted exclusively for that business. No establishments are erected, or stock companies created, to make silk, but silk-worms are fed, and millions of dollars worth of silk is annually made, at a good profit, by the peasants and farmers, who, in connection with their other employments, feed as many silk-worms as will occupy the spare rooms of the dwelling and out-houses.

The reeling of silk (making raw silk) has hitherto been connected with the silk culture in the states; and generally the same families that raised the cocoons have not only reeled, but also twisted it into sewings. For family use, Dale's is probably the best reel; it is the most simple in construction, and costs three and a half or four dollars. There is, however, very little difference in the merits of the numerous silk reels; the preference is always in favor of the cheapest; the high prices are caused by a studied complication, that never improved, but always lessened its merits.

Raw silk can be most advantageously made in "filatures," or reeling establishments, confined exclusively to that branch of the business. The silk manufacturers always require their silk to be of even thickness, some definite number of fibres to each thread, and large quantities of each size. The "filatures" alone can furnish such requirements; for each family can only raise from five to fifty pounds of silk annually, and when different hands conduct the reeling, it is difficult to find two parcels of equal number of fibres, or of equal thickness. The raw silk in bales of 200 to 400 pounds, always commands the highest price in European markets.

The silk culture is simple, and a suitable employment for children. For my views on that part of the subject, I beg to quote from a former communication which I had the honor to furnish in February, 1835, in answer to a circular from the committee on agriculture in the house of representatives of the United States; it is embodied in the printed documents of that session, and therefore only the part particularly relative to this branch of the subject, need be inserted here:

"What kind of soil, and what situation and exposure, are the best for the production of the mulberry?

"A rich, light, sandy soil is the best for the mulberry, though it will thrive well on any soil which is not wholly silicious, like the immediate border on our Atlantic coast. Next to pure silex, the soil least adapted to the mulberry is that purely argillaceous, or compact and hardened clay. Gently rising ground, or a moderate eminence, open to the full action of the sun, is the best situation, and south is the best exposure.

"What species of mulberry is the most valuable, taking into consideration the capability of enduring cold and frost, the quantity and quality of the foliage, and the labor of culture and stripping?

"Taking into consideration all those properties, the *Brusia* mulberry is the best species for feeding the silk-worm. I wish, however, to be understood, that by *Brusia* I do not mean all those various kinds which are sold under that name, but I have a direct reference to the tree or trees which Mr. Charles Rhind brought from Brusia to this country.

"I would remark, that species is a very indefinite term to designate the most valuable mulberry, because among the many millions of trees from the seeds of each species, there are not two trees equally valuable or perfectly alike; each individual tree (considered as food for the silk-worm), forms a distinct variety, differing as much from each other as each individual of the human race differs from all other individuals of the same species, or as much as the fruit of one individual tree differs from the fruit of all other individual trees, raised from seed of the same species. Mulberry trees which produce leaves perfectly alike to the delicate taste of the silk-worm, must be not only of the same species, but also sons of the same parent stock, produced by cuttings inserted in the soil, or by inoculation or grafting.

"I would further remark, that the seeds from each and every species of mulberry furnish some individual trees which are not suitable food for the silk-worm; and further, that the seeds from nearly every species of mulberry furnish some individual trees which are good and valuable food for the insect;—hence, the best method to produce a good mul-

berry orchard is, to select one tree, possessing all the desirable properties, and multiply it by cuttings. By this method a good and valuable mulberry orchard may be made from the indigenous trees of this country. The species native black mulberry furnishes some individual trees which are, in every respect, good and valuable food for the silk-worm. The native black mulberry is equal, in quality, to the best in the world; the leaf is generally smaller than the *Brusia*, and is therefore inferior in quantity, because one hundred pounds of large leaves can be stripped at less expense than the same weight of small leaves.

"What is the best mode of cultivating the mulberry; at what age may it be stripped, and what is its value, expense and profit per acre?

"The nursery should have a southern and eastern exposure, a rich, light soil, and the seeds (when new varieties are wanted) should be sown in rows, three feet apart. When a particular variety is wanted, the particular tree which is to be multiplied must be cut in short lengths, leaving three eyes on each piece, and planted one foot distant, in rows three feet apart, leaving only one eye above the ground. The best time for this operation is in the spring, when the buds have swelled almost to bursting. The best time for transplanting is very early in the spring, as soon as the ground is free from frost; this should be done when the seedlings and cuttings are one year old. The open ground to receive the young trees should be made mellow one foot deeper than the length of the roots, and the top of every tree should be cut off, so as to leave only three or four eyes above the root. The tops will form cuttings for the nursery, while at the same time the health and growth of the trees will be much benefited by the operation. Trees thus treated, may be stripped the second year after they are transplanted, and would cost, standing in the nursery, about one cent each; the transplanting can be done for four cents more, making five cents for each tree standing in its permanent place.

"The 'profit per acre' depends on many contingencies, such as cost of land, cost of labor to gather leaves, cost of building to shelter worms, &c.; in relation to which, I would remark—First: Any number of acres appropriated exclusively to the growth of mulberry and the culture of silk, provided the building is appropriated exclusively to the worms, will not afford any profit; because the gross amount of silk thus raised will not (after deducting a just estimate for labor) pay a reasonable interest on money invested for trees, land and buildings.

"Secondly: Every farmer in the states south of 45 degrees north latitude, can raise from 100 to 300 dollars worth of cocoons in the spare room of an ordinary barn and dwelling; and this would be all profit, if the silk is considered, like poultry, a collateral branch of farming.

"Which is the most valuable species of the silk-worm? What is the best mode and time for their propagation, the quantity, quality, value of, and market for, the cocoons?

"The species *Bombyx*, of Linnaeus, comprehends many varieties of the most valuable silk-worm, among which is the Asiatic, (*Mori*) divided into many sub-varieties, and distinguished only by the color, shape and weight of their cocoons. Their relative value may be expressed thus:

BY LINN. GENUS PHALENA, SPECIES BOMBYX, VARIETY MORI.
Sub-Varieties.

"White cocoon, pea-nut shape, compact, and reels well; 6½ grains of pure silk; most valuable for this country, because it gives the greatest quantity of good silk.

"Bright yellow cocoon, egg shape, 4 to 5 grains pure silk; lustrous; cultivated in Connecticut for more than half a century; reels bad, and therefore of less value.

"Pale yellow cocoon, pea-nut shape, compact, reels well; 3 to 3½ grains pure silk, very soft; receives best dye; is much cultivated in Europe.

"Golden yellow cocoon, pea-nut shape, very compact, reels best; 2½ to 3 grains pure silk, very lustrous and not strong; much cultivated in Spain; is best for fine white ribbons.

"The coloring matter in all cocoons is contained in the natural guin, which can be removed by boiling in soft water, leaving the silk white and lustrous.

"There are four varieties of silk-worm indigenous to the United States, and not found in any other part of the world. They make a large quantity of coarse, strong silk, which can be used at present only by carding. Education may cause these worms to spin in a form suitable for reeling, when the largest kind (*Cecropia*) would, for many domestic purposes, become very valuable to this country. Their relative value may be expressed thus:

SATURNIA OF SCHR.

"*Cecropia* feeds on elder, cocoon 19 grains pure silk.

Polyphemus feeds on scrub oak, cocoon 14 grains pure silk.

Luna feeds on acacia, (locust) cocoon 11 grains pure silk.

Pomether feeds on sycamore, (buttonball,) cocoon 9 grains pure silk.

"The best mode and time for the propagation of the Asiatic silk-worm, (*Mori*), is, to expose the eggs to hatch, for a few hours, in a paper box, near a fire; feed the worms regularly three times per day; admit air freely, and remove the filth; at least once per week. At about the fortieth day they will commence winding, and in four days more they will have finished the cocoons, when those for reeling should be put in the oven, to remain half an hour, (after having drawn the bread,) to kill the chrysalis. Those for seed should be placed, uncovered, in a dark room, on paper, where the perfect insect (moth) will come forth in twenty days, to cohabit, deposit eggs, and die in eight days more. The eggs should be left adhering to the paper, rolled up and placed in a dry, cool and dark place, until wanted to hatch for the following season. The extreme cold of this climate will not injure the eggs. Dampness and direct rays of the sun are very injurious to the eggs and worms in all their stages. The time for hatching is best when the trees first put forth their leaves. Each worm spins one cocoon, and each female moth deposits about 700 eggs. Allowing the sexes equal, 100 moths would give an increase of 35,000 worms. The quality and value of cocoons are given in preceding remarks. A good market for cocoons is found at silk manufactories, which are already sufficiently numerous for the quantity of silk grown in this country. A more suitable market would be an establishment exclusively for reeling. Such an establishment does not exist in the states; but it is probable that interest will induce individuals to erect them as soon and as fast as cocoons can be raised to supply them."

Since writing the foregoing, experience has increased the favorable opinions therein expressed in regard to the native black mulberry. The best Italian sowings are made from worms fed on the black mulberry of Calabria. Mr. Caldwell, of Clark county, Va. sent me two bushels of cocoons from worms which he fed entirely on the native black mulberry. I exhibited them at the Fair of the American Institute, where a part of them were reeled and twisted into sowings by Mrs. Brooks, a very intelligent and skilful lady from Connecticut. Mrs. Brooks has four years practical acquaintance with the reeling of silk, and she remarked, that these cocoons from the native black mulberry, made "the strongest silk that she ever saw" and considered it "superior to all others for sowings."

There is not much difference in the silk made from different species of mulberries, when the compared specimens of produce are all by the same sub-variety of worm. Generally, all silk-worms will make the strongest and most lustrous silk, from the most hardy and tough species or varieties of mulberries; and the most tender and perishable, afford silk of the least strength and lustre. Hence, if strong and lustrous silk is preferred, then the *Black*, the *Brusia*, and the *Common White*, are the best mulberries for the silk culture. And the *Moretti*, the *Multicaulis*, the *Chinese*, and many similar varieties, are best for producing a comparatively dull and weak fibred silk. The silk made from the *Morus multicaulis*, much resembles cotton in lustre and strength of fibre.

The native black mulberry is known to be a very superior timber. A few facts that have come to my knowledge, may not be inappropriate here.

The schooner "UNION," built at Lodi, N. J. about forty-three years ago, had a large portion of her upper timbers, and most of her trunnels, of native black mulberry. In fourteen years afterwards she was overhauled, when her deck planks of Georgia pitch pine, were much decayed; the white oak futtocks were completely destroyed by rot, and the white oak timbers and bottom planks, were much decayed; while every timber and trunnel of black mulberry was perfectly sound. She beached and stranded during a severe gale near the mouth of the Delaware, after a constant service of more than twenty years; and at no time from her launch to her wreck, was there any perceptible sign of decay in the black mulberry although the trunnels of this wood, were driven into the upper futtocks, where (in common with the upper timbers) decay always commences first in vessels of her class. The black mulberry used in her frame, measured from sixteen to eighteen inches across the butt.

The sloop "HIGHLANDER," built near Belleville, N. J. more than thirty years ago, is now running on the Passaic and Hudson rivers. All her upper timbers, and most of her upper futtocks, are mulberry, principally white; and, although more than thirty years have elapsed since her launch, yet no sign of decay has ever appeared in the mulberry employed in her frame, while some of her white oak timbers have long since crumbled from the spikes.

Mr. Cornelius Kingslane, a highly respectable and intelligent shipwright, who built the Highlander, informs me that he has built as many as thirty vessels, in a large number of which he employed native black mulberry, and from long experience is convinced, that for durability and strength, is superior to white oak, chestnut, cedar, wild cherry, red elm, or locust.

I am aware that some fastidious gentlemen contend, that there is no black mulberry in the states. Such opinions are founded on the fact that Linnaeus speaks of red (*Rubra*) only in America. Names are given to facilitate science, and when we have trees bearing pleasant fruit, it is very convenient to designate them with specific names. We have an indigenous tree bearing black mulberries, and it is by general consent called the *Black Mulberry*, notwithstanding Linnaeus and his followers may insist that it is "Rubra."

Silk forms a very large integer in the trade and commerce of nations. The natural advantages of the states, are favorable to participation in a full share in its culture, manufacture, or commercial transportation; but foreign treaties, and internal legislation, have not placed this country "on a footing with the most favored nations." It is not my business, or intention here, to discuss the issue of "free" or "restricted" trade; but I deem it within my province to notice some parent inconsistencies which (although they have a controlling influence in the American silk trade) cannot be reconciled to any known system of policy, or political economy. Manufactured silk (except sowings) from all Europe are permitted to enter our ports *free*; and the present distress in the country, tells a startling tale of the very free use made of the privilege, by foreign artisans and foreign ships; while our own manufacturers are restricted by a duty of ten per cent from beyond the Cape, and twelve per cent from Europe on the raw material, that was to employ and support this important handicraft. The same causes that restricted the handicraft, also restricted the "carrying trade" in "American bottoms." A gentleman of Boston, an enlightened and intelligent traveler, and long a resident of Canton, has furnished me with full and complete returns of the export silk trade of China from 1831 to 1838 inclusive; and the facts therein show, that of the large amount of raw silk annually exported from Canton, only about one hundred and fifty piculs are shipped to America in American vessels, while the large quantity of nine thousand piculs are shipped to Eng-

land in British ships on English account. It is then manufactured in Europe, and sent mostly in European bottoms, to enter the American market "duty free."

I regret that the nature of this communication will not permit me to give the valuable details furnished me, of the China silk trade; but the export of raw silk from Canton for a few years, may serve to illustrate the tendency of all the Asiatic raw silk trade from ports beyond the Cape of Good Hope:

EXPORT OF RAW SILK FROM CANTON.

To America in Years. American ships.	To England in British ships.	To England in American ships.
1832-3 144 Piculs,	6,671 Piculs,	None.
1833-4 210 "	9,836 "	80 Piculs.
1834-5 13 "	10,000 "	None.
1835-6 225 "	9,276 "	None.

The Chinese *picul* is equal to one hundred and thirty-three and a third avordupois pounds. The prices of raw silk at Canton, in 1832-3, were for "*nankins*" \$35 per picul—"canton" \$225 per picul, and "*common quality*" \$58 per picul.

Under the existing regulation for manufactured silk, an import duty, whether of ten, or ten thousand per cent on raw silk, can have no influence to encourage or depress the silk culture of the states. This may seem paradoxical, but the elucidation is simple and easily understood. The silk culture, is the producing of raw silk. Raw silk has no value except that arising from its use in "silk manufactures." The comparative prices of manufacturing labor, enables Europe to make "silk manufactures" much cheaper than they can be made in the states; and by the existing ("free") regulations, Europe can, and does, supply our market at prices that prevent the possibility of competition by our own manufacturing establishments, which must cease operations, and leave the value of raw silk to be regulated by its use in silk manufactures of Europe, where an American import duty of ten or ten thousand per cent, cannot affect it.

By the present tariff, the only manufactured silk chargeable with duty from Europe, is the sewings, that pay twenty-eight per cent, which enables American manufacturers to compete with the European sewings in our market. This, at present, consumes nearly all the raw silk made in the states; and if an additional import duty was levied on sewings, or if an equal duty was levied on any or all other "silk manufactures" required in the market, then, and not till then, would a duty on raw silk have a controlling influence on the American silk culture.

Yours, &c.
CHARLES F. DURANT.

Potatoes—Spring Wheat—Muck for Rye—China Corn.

MESSRS. EDITORS.—In a former volume it was intimated, that I might communicate the result of some experiments then in view. Potatoes being an important crop, both for the table and stock, I have tried a number of varieties, on different kinds of soil, the last four years. Last spring I selected a patch that was seeded down the previous year, but owing to the severe drought of 1838, the grass seed all failed. The soil is a dark brown loam, eight to ten inches deep, resting on a deep, soft, tenacious subsoil. There was spread upon it, at the rate of about twenty-five ox cart loads of coarse barn-yard manure to the acre, and covered with a plow about ten inches deep, then harrowed well and then furrowed about three feet each way. Each row, the way it was planted, contained about one square rod of ground. It was alternated with two rows of potatoes and two rows of corn, running north and south. First two rows of Rohan potatoes, two do. of a new variety from France, two rows of short Lops and two rows of new Lancashire pink eyes, both imported from England in 1838—two rows of Mercers and two do. of kidneys. The land was quite uniform, and the tillage the same. When planted there were six eyes of Rohans put into a hill, in the form of a triangle, all the other kinds had a plenty of seed, adding to each hill a part of a shovel full of good manure. They were all well tended, and when dug about the 20th of September last, the two rows of Rohans yielded five and a quarter bushels, the two rows of French two and a half, the two rows of short Lops five and three-quarters, the new Lancashire pink eyes one and three-quarters, the two rows of Mercers two and three-quarters, and the two of kidneys, two and a half bushels.

I have cultivated the Rohans two years, from seed obtained from Mr. Thompson, of Catskill, N. Y. I tried some early planted on warm ground, but the vines were fresh when the first frost came; the quality of these, however, was better than those later planted.

It is well known that any kind of potato not fully ripe is not a fair trial of its quality; I am of the opinion, if Rohans had a longer season to grow, they would be greatly improved in quality. The potato from France proved a second quality for the table. The short Lops were also green when cut down by the frost; in quality they may be ranked with the Mercers. They are round, not large tubers, but numerous in the hill, they are heavy, yellowish meat, good flavor, boil mealy and often crack to pieces. The new pink eyes are early, fine quality, but yield poorly.

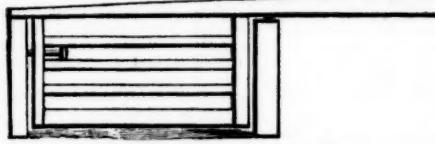
I hope to be excused for my particularity, when it is so necessary to give the result of any first trial.

I planted last spring about two square rods of China corn, the seed from Mr. Thorburn, N. Y. It was on the patch with the potatoes, and yielded at the rate of

98 bushels to the acre, of sound, good corn; and one of my neighbors had a patch of the same, that produced at the rate of more than 100 bushels to the acre. These highly cultivated patches, however, are not a fair trial of common field crops, but they show what might be done in the field, if we tilled less and cultivated better. I have cultivated three years different kinds of spring wheat. I tried what was considered a superior kind, from the virgin lands of Michigan, where it yielded bountifully, but it produced miserably here, 50 per cent less, on the same land, and same culture, than the Siberian from Rome, N. Y. and the quality much inferior. The Siberian answers best here, and in a common season yields from fifteen to twenty bushels to the acre.

The fall before last, I was preparing six acres for winter wheat, the Dickerson from Tioga, New-York, on ground that had been cropped probably for a century, with little return of manure; the quantity of compost which was intended to be applied to the acre falling short, there was spread on the residue about 30 loads of muck from a drained meadow, and then sowed with rye; the yield was 34 bushels of superior grain; on measuring the ground it was one acre and ten square rods. Other trials of the application of decomposed muck for a crop of rye, have been favorable.

Yours respectfully, D. L. DODGE.
Cedar Brook, Plainfield, N. J. March 14, 1840.



FIELD GATES.—[Fig. 35.]

A writer in the third volume of the *Genesee Farmer*, estimates the difference of time between passing through gates and bars, where a man and team passes but once a day for half the year, to be equal to 34 days, and goes into a calculation of the amount, of which this time would pay the interest. As a moment's reflection will convince any one, that there is a great saving of time in using gates in preference to bars, and as our old bars are fast going to decay, and must soon be replaced by new ones, or something else, I will give my method of making what I call improved balance gates. Balance gates are those having the top rail extended sufficiently to balance the weight of the gate; and, as usually made about the country, are, of all things, the most unsightly; but there is a way of making them both comely and durable. My method of making them, is as follows:—Take a tree of cedar, pine, chestnut, or other durable timber, twelve or fourteen inches in diameter at the butt, and which tapers pretty fast; cut it eighteen or twenty feet long; hew the small end for eleven feet, three by four inches at the end, and six by four inches at the distance of eleven feet from the end. Mortice, six inches from the end, a hole four inches long and one inch wide; also another mortice eleven feet from the end, six inches long and one inch wide. In these mortices insert slats of good white oak, of sufficient size to fill the mortices, extending from the shaft four feet and two inches—on these slats lay boards, either four, six, or eight inches wide, and at such distances apart as corresponds with the fence, or suits your taste. Then take two slats similar to the first, only thinner, place them on the boards opposite to those morticed through the shaft and rivet them together—one rivet in each end of each board, and the gate is ready for hanging. A better idea of the gate can be obtained from the above plate, fig. 35.

The post on which the gate hangs should be of seasoned white oak, twelve or fifteen inches in diameter, six feet long, either round or an octagon, and set in the ground two feet. Insert in the top of this post an east iron gudgeon, having the end oval, such as is technically called step-gudgeon. Let this gudgeon project above the top of the post two and a half inches. Insert the box for this gudgeon to run in, into the shaft so deep that the shaft will barely clear the top of the post. The gate should hang so near the post on which it rests as not to sag when opened, and if it hangs right, it will turn as easily as if suspended on hinges. If the end of the shaft is too light, weight is to be added; if too heavy, the sides should be hewn off.

The gate should be shut against a post of sufficient size to admit of being cut away so as to let the shaft come into line with the two posts. The best fastenings for such gates are sliding bars, to enter a mortice in the post, so that the gate can neither be raised nor the bottom shovelled through either way.

The advantages of these gates over others, are their cheapness and durability. They can be made by any farmer, and a man can make one as quick as he can make a good set of bars. The whole expense of a gate made in this way will not exceed \$2.00 when made in the neatest manner. The reasons why they are more durable than other gates are, they cannot slam by high winds if left open; unruly cattle cannot break them by jumping on them; they are not liable to be run against by careless driving. They are also very convenient in deep snows, as they can be lifted over the snow drifts. In short, for field gates, either in summer or winter, in high winds or low, I would recommend them to my brother farmers as a cheap, durable gate, and one, if made right, that will be an ornament to their farms.

Yours, &c. MYRON ADAMS.

Ontario County, Feb. 10, 1840.

Weather, Crops, &c. in Indiana.

EDITORS OF THE CULTIVATOR.—Heavy peals of thunder are now rattling over our heads. This has been a remarkable month. But little snow has fallen, and none laying on the ground. The weather has been, for some days, much like April or May—frost nearly all out, and ground so dry that some plows have been started. This is very unusual for so high a latitude as 41° 2', even in the West. The months of December and January were very steady cold, and good sledding nearly the whole time. The first snow fell while the ground was yet soft; consequently, the roots of the wheat have been kept in fine order, and the crop now is exceedingly promising. There is still an immense quantity of the last crop in the hands of the growers, at 50 cents a bushel.

As the great Western Prairies begin to furnish this staple to the east, it will soon be time for farmers there to turn their attention to other products. For, as here no regard is paid to the preservation of the quality of the soil, while its present quality lasts, the eastern farmer cannot compete with the western wheat grower.

You would suppose that some imagine that this soil can never deteriorate, to see them moving their stables to a new location, on account of the accumulations of manure, and setting fire to immense piles of straw "to get it out of the way." But such are the facts. You can easily imagine how long the best soil will last under such a system of cultivation.

The December number of the *Cultivator* is just received. I cannot speak in too exalted terms of him whom so many thousands will delight to keep in remembrance, by looking upon his fine intellectual face.

My warmest wish, gentlemen, is that you may be enabled to fill his editorial chair, with honor and credit to yourselves, and satisfaction to his numerous admirers. And when the time comes that we shall have nothing but your likeness to look upon, may you enjoy that most enviable of posthumous fame, that the world are now bestowing upon your much lamented predecessor. And so far, I am in candor bound to say, the evidence is strongly in your favor.

I remain your devoted agricultural friend,

SOLON ROBINSON.

Lake Court-House, Feb. 28, 1840.

EXPERIMENTS IN MARYLAND.

MESSRS. EDITORS.—As I am not particularly devoted to the plan in which our ancestors cultivated the soil, I have in my little way digressed from that old style which is wedded to almost every neighborhood, that of the son treading in the footsteps of the father, year after year, in the same monotonous way. In 1836, I purchased a small piece of land; the year before, the owner took off of it a crop of wheat which brought him about four dollars to the acre, being about five bushels. I found it well set in clover. I immediately divided the arable part into three lots. In the fall of 1836, I sowed five bushels of wheat on the half of lot No. 1, containing about five acres. In the spring of 1837, I sowed three bushels of oats on the other half. This has been twice plastered over, a bushel each time to the acre—in spring of 1836, on the clover—in the spring 1837, on the wheat and oats. I was very particular in not suffering this lot to be grazed, and especially so in not suffering a hog to touch any part of the clover. I had a little cut, but the second growth was turned in, in the fallowing for the grain. It is enough to say, I got the land in good order before seeding either wheat or oats, which with us is no very easy work, the soil being stiff and very subject to baking. In July, 1837, by the time some of my neighbors had secured their harvests, I had as follows in market:—

2½ acres in wheat, making 22 bushels to the acre,	\$150 00
55 bushels wheat, sold at \$1.50,	\$82 50
2½ acres in oats, making 52 bushels to the acre, 130 bushels oats, sold 45 cts.,.....	58 50
Admitted by persons competent of judging, that I lost by cutting a swath or two to get out the wheat, and not cutting it time enough, at least 20 bushels, which could have been saved with better management; making 20 more, at 45 cts.....	9 00

The first crop paying the cost of the land, it having cost me \$30 per acre, leaving the land indebted for the expenses of working it. This it must be remembered was the year of the drouth. This crop was thought by my neighbors to be rather better than any other grown in this vicinity, of the same kind. As I was convinced of the value of clover and plaster, I felt anxious to make more to the acre, than I could by the culture of wheat and oats. In an adjoining lot, which was on clover, I suffered my stock to graze very close, yet no hog was seen there, for to my mind it is a dear meat that is raised on young clover, especially at the price it is now bringing.

On this lot I raised a little corn, about forty bushels to the acre; but on about five acres, I planted 27,000 tobacco plants, being less than the usual distance apart, for which, from the old school planters, I got a scolding, and a prediction, that I would not succeed, for deviating from the custom of planting nearer than three feet. But I took the time and trouble to work the ground with the plow, harrow and roller, until, from its being in a rough and cloggy state, it was made even and well pulverized. The consequence was, I had very little trouble to work it, the plow going but once; the rest was done with a small handled harrow. Getting ground in good

order is half the battle as to the labor part. This lot No. 2 brought me 7,500 pounds tobacco, which sold at only a moderate price, being \$402.00 for the product of five acres, or \$80.40 cents per acre. Lands under the old system, under circumstances unfavorable, produce about five bushels wheat, which brought only 80 cents, being \$4 per acre.

In 1834, in lot No. 3, being two years in clover, and degenerating, I planted a heterogeneous mixture of corn, tobacco, potatoes and beans, determining that no space should be left without something on it; but after all the work which was necessary was done, even to artificial seasons, I found my close planting upon the quantity of filth I had put upon the ground, acted only in conjunction with the drouth, to fire and kill what was on it. I therefore failed in toto of making what I anticipated, a悲哀 crop.

Not being yet out with experiments, I planted lot No. 1, (which I sowed with clover when I put it in oats in 1837, and during the whole time keeping hogs from trespassing upon it, thereby giving the roots of the clover a fair chance, though I grazed it,) in tobacco in 1839, flattering myself that there was still room for improvement, and that by adding manure to the clover, I could obtain 2,000 pounds per acre, or \$100 per acre. Thus far I think, there is but little reason for apprehending a disappointment, if tobacco should not fall from its present price.

Should this be worthy a place in your paper, I will let you hear from me when the tobacco is sold, when I will give my manner of cultivation, &c. and should be glad to receive any instruction from those who do better, as I am only wedded to my system until a better is shown me. The sole improvement to me appears to be in the free use of clover and plaster, and the entire disuse of the hog upon clover.

EXPERIMENTER.

Tracey's Landing, Feb. 5th, 1840.

Account Current with Various Crops.

MESSRS. GAYLORD & TUCKER—Having been induced by the reading of agricultural papers, to keep a farm account the past season, I am much pleased with the plan, as we can thereby ascertain what crops are the most profitable, and direct our cultivation accordingly. The following is an account of my cultivated crops, which, if you think of sufficient interest, you may insert in the cultivator.

POTATO CROP.

Pieces No. 1, Containing 2½ acres—manure spread and plowed in—planted on ridges, two rows on a ridge.

Dr. Cr.

To plowing and harrowing,	\$6 18	By 691 b. pota's at
" ridging,.....	2 98	25 cts... \$172 75
" planting,.....	6 37	Deduct,.. 104 45
" 56 loads manure,.....	28 00	
" 66 bushels seed—25 cts.	16 50	Profit,.... \$68 30
" hoeing,.....	7 68	
" plaster,.....	1 00	
" harvesting,.....	19 50	
" board,.....	12 50	
" interest on land,.....	3 75	
		\$104 45

No. 2, Containing ½ acre—manure spread and plowed in—planted in single rows without ridging.		
To plowing and harrowing,	\$2 05	By 94 b. potatoes
" 15 loads manure,.....	7 50	at 25 cts. \$23 50
" 2 days' planting,.....	1 50	
" 15 bushels seed—25 cts.	3 75	
" 3 days' hoeing,.....	2 25	
" 4½ " harvesting,.....	3 19	
" board,.....	2 68	
" interest,.....	75	
		\$23 67
Deduct,.....	23 50	
		17

No. 3, Containing 1½ acres—planted on an inverted sward, without manure—single rows.		
To plowing and harrowing,	\$5 33	By 190 b. pota's at
" 4 days' planting,.....	3 00	25 cts.... \$47 50
" 30 bushels seed—25 cts.	7 50	Deduct,.... 36 23
" 5 days' hoeing,.....	3 75	
" 10 " harvesting,.....	7 50	Profit,.... \$11 27
" plaster,.....	90	
" board,.....	6 00	
" interest,.....	2 25	
		\$36 23

My potatoes were an uncommon light crop, having suffered from a blight which injured most of the potato in this part of the country. The results of the several pieces speak well in favor of ridging.

RUTA BAGA CROP.

No. 1, Containing ¼ acre—manure spread and harrowed in—seed sown on ridges—rows two feet apart.

To plowing,.....	\$1 25	By 500 b. ruta ba-
" 11 loads manure,.....	5 50	gas, 20cts \$100 00
" preparing ground & sow-		Deduct,.... 23 63
" ing seed,.....	2 25	
" 6 ounces seed,.....	38	Profit,.... \$76 37
" 7 days' hoeing,.....	5 25	
" 5 " harvesting,.....	3 75	
" board,.....	5 00	
" interest,.....	1 25	
		\$76 37

53 63

No. 2, Containing ½ acre—manured in the ridge—rows 2½ feet apart.		
To plowing,.....	\$1 25	By 350 b. ruta ba-
" 8 loads manure,.....	4 00	gas, 20cts. \$70 00
" preparing ground & sow-		Deduct,.... 22 63
" ing seed,.....	2 25	
" 6 ounces seed,.....	38	Profit,.... \$47 37
" 7½ days' hoeing,.....	5 62	
" 5 " harvesting,.....	3 75	
" board,.....	4 13	
" interest,.....	1 25	
		\$22 63

My ruta baga suffered from heavy rains soon after sowing. I had also considerable transplanting, which was done in odd hours, and of which I kept no account.

CORN CROP.

Containing one acre—manure spread and plowed in.		
To plowing and harrowing,	\$6 12	By 60 bushels of
" 40 loads manure,.....	20 00	corn,.... \$60 00
" 4 bushel seed,.....	75	Stalks,.... 10 00
" 2½ days' planting,.....	1 88	
" 9 " hoeing,.....	6 85	\$70 00
" 3 " cutting & shook-		Deduct,.... 55 80
" ing,.....	2 25	
" 10 " harvesting,.....	7 50	Profit,.... \$14 20
" plaster,.....	1 55	
" board,.....	7 50	
" interest,.....	1 50	
		\$55 80

My corn was much injured by the grub and cut-worm.

WHEAT CROP.

Containing two and a half acres.		
To plowing and harrowing,	\$6 10	By 40 bush. wheat,
" 4 bushels seed,.....	8 00	at \$1 75. \$70 00
" preparing seed & sowing,	5	Straw,.... 9 00
" plaster and lime,.....	4 40	State bounty,.... 3 00
" harvesting,.....	6 00	
" thrashing,.....	4 00	\$82 00
" board,.....	5 25	Deduct,.... 38 00
" interest,.....	3 75	
		Profit,.... \$44 00
		\$38 00

OAT CROP.

Containing one and one-eighth of an acre.		
To plowing and sowing,	\$2 75	By 65 bush. oats,
" 4 bushels seed,.....	2 40	at 50 cts. \$32 50
" harvesting,.....	4 12	Straw,.... 7 50
" thrashing,.....	1 95	
" board,.....	2 50	\$40 00
" interest,.....	1 50	Deduct,.... 15 22
		\$15 22 Profit,.... \$24 78

By way of experiment, I cultivated a small piece of ground with carrots, beets, and parsnips: carrots yielding about 800 bushels per acre; beets 600, and parsnips 450. The price of the several crops is reckoned at the market value in this place.

Respectfully yours,

EBENEZER SMITH.

Middlefield, Mass. Jan. 23, 1840.



Hay Rack for Sheep.—[Fig. 36.]

MESSRS. GAYLORD & TUCKER—Number 12, volume 6, of the Cultivator contains an article reading thus—"The 20th November is universally understood throughout New-England as the close of the season of pasture, and the time for bringing our cattle and live stock to the barn. Sheep may be left out as long as the ground remains bare," &c. In my opinion here is an error. Sheep will live a while thus treated, and so will cattle and horses; but whoever manages thus with their sheep will stand the chance of losing at least one out of a hundred during the winter. It does not consequently follow, that it is good management on account of its having long been practiced.

Another error, in my opinion, which exists among many farmers, is, in permitting their sheep to range their meadows when bare in winter and spring, doing not only injury to themselves by destroying their appetite, without obtaining but little nutritious substance, but many times greatly injuring the meadows by destroying the grass roots that are thrown up by the frost. The time has come when every farmer ought to be provided with racks in which to feed his sheep, at least in wet weather; still there are many who have no place other than the wet ground or dirty yard, at such times. Much is annually wasted in the articles of hay and manure, for want of racks. Much time and pleasure is lost in transporting hay from place to place in hope of finding some spot where the hay will not be trampled in the mud and wasted.

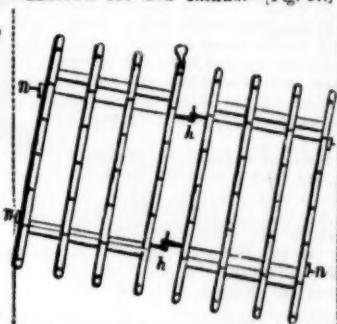
I will give a description of a moveable rack (fig. 36.) which is light, cheap and durable, fourteen of which I have used three or four years, two only have been out of repair.

It is made with four posts, four inch square, two feet six inches long; four rails, two inches by four, fourteen feet long, two on each side; one board on each side, four

inches wide. The posts to be bored with a two inch auger, and the ends of the rails shaved down to fit the hole; the boards to be nailed on the outside of the posts at the bottom or lower end; two end rails, two feet four inches long; a board nailed upon the ends of the rack, at the top of the posts.

Yours, &c. L. G. NORTHRUP.
Shoreham, February 17, 1840.

Harrow for Old Lands.—[Fig. 37.]



MESSRS. EDITORS—The object of my present communication is to lay before the readers of your most valuable paper, a plan and description of a harrow.

Description.—As far as my observation has extended, I find that the harrow or drag, most commonly used, is well calculated for new land, to delve between stumps and stones; but, for older farms with but few roots and rocks, the above representation, will be found much superior as a labor-saving implement, on account of the great number of teeth, not any two of which traverse the same track. It is composed of two pieces of frame work. The stiles 24 inches square, and rails 3 inches and 7/8 of an inch thick. The rails go the whole thickness through the two middle stiles, and are shouldered to tenon into the outside stiles; are hung as above represented, with iron hinges, having a shoulder at the stile hinged, and a nut at the opposite outside of the stile. The teeth may be 8 inches long and 7/8 of an inch square, tapering to a point—n. n. n. are the nuts—h. h. where hinged. The dotted lines are parallel with the direction the team goes.

Respectfully yours,
JOHN CAIN.

Rutland, Vermont, Feb. 15th, 1840.

Rearing Calves on Milk and Meal.

MESSRS. EDITORS—In the last number of the Cultivator, you published some remarks of mine on the mode of feeding calves by Mr. Hearsey, by giving skimmed milk with some meal, &c.

Mr. Hearsey says that it is necessary to explain the manner of mixing the meal—that if the raw meal is put into the milk, it will sear the calf. He makes the meal into sundaun, heats the milk over steam to the state of its coming from the cow, and then mixes about one pound of the cold sundaun in the milk, and feeds the animal in this way three meals a day. His calves thus fed, at the end of the year are more than double the size of those calves that suck the cow. He now makes 12 lbs. butter a week from two cows, and uses six quarts of milk daily from the same cows.

He adds a pint of boiling water to a pan of milk when set, holding six quarts, and the next day the cream will all be floating on the top, and skimmed off and churned.

DAVID TOMLINSON.

Schenectady, March 10, 1840.

Preserving Hams for Summer use.

MESSRS. GAYLORD & TUCKER—At the time is now come to put up hams to be kept for summer use, I will state to you my mode. I believe we have tried all the methods in practice, and must prefer the one here described.

We take an old cask or box, say an old flour barrel, put a good layer of coarse salt in the bottom, and then put down another ham; cover that with coarse salt, and put down another ham, and so on till the cask is full, or the hams all deposited. Set the cask in a cool dry place, and whenever a ham is wanted take it out, and it will be every way as clean, clear from vermin and all other impurities, as when put down. This is attended with very little trouble or expense, as the salt is not at all injured for any other use in the fall. My cellar being a very dry one, we put the cask of hams in a cool place in that; but a damp cellar would be apt to dissolve the salt. The hams should be well dried before being put down.

Yours, CALVIN BUTLER.
Plymouth, Conn., March 14, 1840.

SORE TEATS IN COWS.

MESSRS. EDITORS—As many of our farmers suffer severely annually, by swollen udders and teats in their milch cows, the following is a cheap, simple, and a most sure remedy.

Take the bark of the root of the shrub commonly called bitter-sweet, wash and simmer it with a small quantity of lard, until it is very yellow, and when cool, apply it to the parts that are swollen, two or three times a day, until the udder and teats are perfectly soft and free from kernels. It has been tried with great success in our vicinity.

A FARMER.

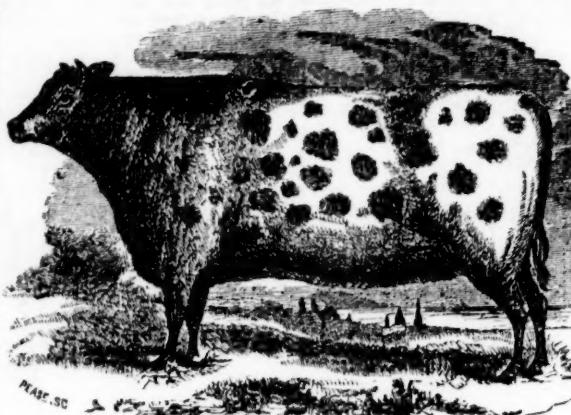
East Windsor, Ct. Jan. 15, 1840.

A HOOISIER CALF—[Fig. 38.]

The annexed is the profile of a calf nine months old, as it stands in the yard eating a few ears of corn. It is now four months gone with calf; and if nothing happens, will, of course, be giving milk at the early age of 14 months. According to the estimate of a butcher who examined it the other day, it would dress four hundred weight of meat. It is out of a rather small but handsome white heifer, three years old, of the common breed; well made for a scrub, save her very heavy bull neck, and enormous ox horns. This defect of the dam (bull neck) appears conspicuous, you perceive, in the calf.

The color is a beautiful spotted—thicker and darker towards the head, which is nearly red, and larger and thinner towards the flank. The spots in the above are exactly as they appear on the left side; making, however, all due allowance for my total ignorance of the science of "light and shade."

The bull it is from is a most beautiful animal, three years old, and about three-fourths in the blood of the short-horned Durham. The moment I read the interesting article of Mr. Randall, in your last, it struck me at once that the above calf is a very happy illustration of his views in relation to crosses with the Durham. Except the defect of too heavy neck, "the Hoosier Calf" would not yield in beauty to anything of the full blood I have ever seen. The rough pencil sketch given you does no manner of justice to its elegant proportions. The body is round as an apple, and the slight sinking of the belly, perceptible in the profile, has only occurred



within the last few weeks. I have especially failed to sketch the beautiful outline of its hind quarter, straight in the leg, ample and rounding above, beyond almost any thing I have ever seen.

My apology for venturing to give you a pencil sketch of it is, the very great interest which Mr. Allen's sketches of hogs, and Mr. Randall's of cattle, have excited in behalf of your paper. We are all but children of a larger growth, and must have something like sensible objects to give us definite ideas.

Cass County, Indiana, Feb 25 1840.

commenced husking it on the field, and each day I took in the corn and fodder. The ground and the corn were carefully measured, and I got from seven acres, 1,352 bushels of ears, which I calculate to be 676 bushels of corn, or 96½ bushels to the acre. The ground was a clover and timothy sward, mowed the two previous seasons; it was manured with twelve loads manure to the acre, and plowed down early in the spring. After four times harrowing the ground, the corn was planted three feet between the rows and one foot in the row. At the first dressing, my corn was thinned leaving two stalks (together) for every foot in the row. In the culture of my corn, it received no extra labor or care beyond what I usually bestow on my corn crop. Of the common corn of this country (the yellow gourd-seed) on land equally good and the season at least equally favorable, I never made more than 65 bushels to the acre; and this increase is chiefly attributable to the fact, that the Dutton corn will bear fifty per cent more stalks to the acre than our larger growth. The stalks, too, are of considerable value. I have procured Green's patent straw cutter, and feed ten cows with my stalks and roots without any hay this winter; and the stalks from my seven acres will be more than sufficient.

I planted last spring one acre of beets; part sugar beet and part mangold wurzel. They yielded 1050 bushels, weighing 26 tons. I also planted one acre of ruta baga, which yielded 600 bushels. The beet root and ruta baga, were I believe never before raised in this county, except a few in gardens. I never saw any before last season, consequently I received all my knowledge from the Genesee Farmer. I think every farmer should read a good agricultural work, and would do so if he understood his interest. JOHN MYERS.

Canton, Stark Co., Ohio, Feb. 10, 1840.

IMPORTANCE OF ADVERTISING.

MESSRS. EDITORS—I have just received the February number of the Cultivator—and hasten to address a few lines to you on a subject, which I consider of importance to every farmer who is a breeder of cattle. With Mr. Allen of Buffalo, I regret exceedingly that you have come to the determination of not admitting advertisements; for, with that gentleman, I consider them half the spirit and interest of an agricultural journal—so much so, that if I had to make the choice between your well conducted paper, excluding advertisements, and an inferior one, admitting them I should give the preference to the latter. Of course I would confine the advertisements to strictly agricultural subjects. To such of us as are not in the habit of frequenting those places of abomination, the bars of taverns, the sources of information on these subjects are narrow and limited. In this respect, the farmers in the old country have a great advantage over us. For there, every small town has its weekly market days, on which the farmers meet to sell their produce, and afterwards dine together at public ordinaries, on plain substantial dinners. This brings the farmers together, and affords them an opportunity of conversing on general agricultural subjects—of deriving much useful information with regard to sales of stock, &c.—of discussing the merits of newly invented agricultural implements—and of discoursing on the merits of the different breeds of cattle most in repute. As we, (unfortunately I think,) have not the same facility, I trust, Messrs. Editors, that you will do all in your power to aid us, in gaining information where we may best improve our cattle, &c. by crossing with the most approved breeds. For want of this information, I have myself felt great inconvenience, both with regard to my ewes and sows. What I suggest is, that you should publish, at the suitable seasons, a list of male animals of improved breeds, with the names and residence of the owners, and the price at which the animals serve. This would not take up much room in your valuable publication, and I consider that it would afford information well worth the space it would occupy. Wishing you every success in your new work,

I am, gentlemen, yours respectfully, C. B.
Ontario County, Feb. 20th, 1840.

It will be seen by a notice in this paper that we have determined to issue an advertising sheet on the first of next month. Owners of high bred animals, whether of horses, cattle, sheep or swine, by availing themselves of this opportunity to make known the particulars desired by our correspondent, will, it is believed, promote their own interests as well as confer a favor on the public.

Carpenter's Harvesting Machine.

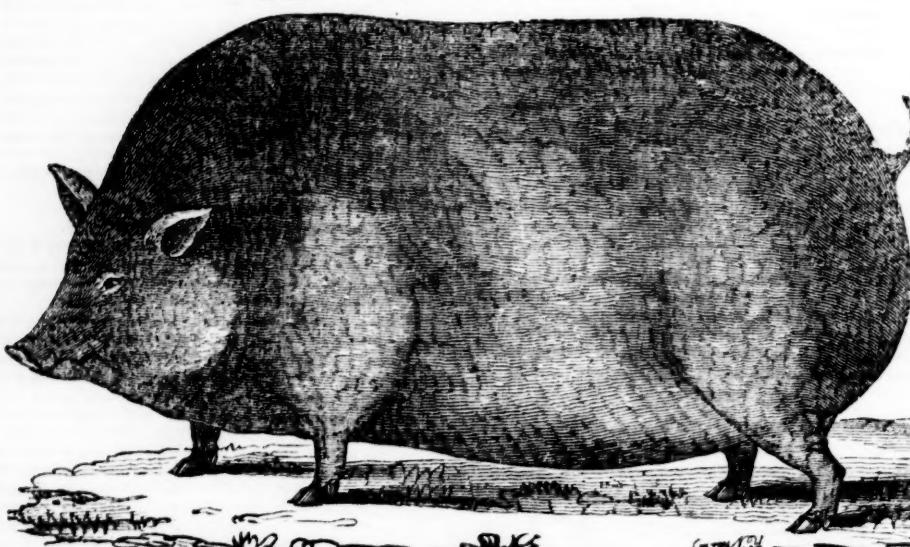
EDITORS OF THE CULTIVATOR—In the March number of the Cultivator, I saw the queries of Mr. Lambson, of New-Jersey, relating to "Carpenter's Harvesting Machine." We are glad to gratify any who may wish information concerning the Harvesting Machine. He asks—

"What would be the cost of the machine?" Six hundred dollars, *warranted and durable*.

"What number of hands is necessary to attend it?" One to drive the team, and one to take care of the machine.

"Where the ground is very wet, would the car wheels sink so deep as to render the machine useless?" The car wheels have broad felloes to keep them from sinking into soft ground.

"Could the thrasher be dispensed with and the machine taught to mow?" We think not; it is too heavy and too costly for that use. The great saving in grain and labor, is in finishing the work without laying the grain



Berkshire Hog Constitution.—[Fig. 39.]

MESSRS. EDITORS—We send you a plate, and a short account of a Berkshire hog, bred and fed by us, of which the above plate is a good likeness, with the exception of his having four white feet, and a small strip of white in his face. He was put up to fatten on the tenth day of September, at which time he was calculated to weigh from one hundred and thirty to one hundred and sixty pounds alive—he was slaughtered on the twenty-fourth of February last, and weighed six hundred and twenty-six pounds. Supposing his dead weight at the commencement of fattening to be one hundred and thirty pounds, which we are confident if an error, it is on the favorable side—it gives him an increase of four hundred and ninety-six pounds, in one hundred and sixty-six days. His weight we do not think so very extraordinary, only in his attaining it in so short a time. It is our impression, that he would have attained the weight of eight hundred pounds, had the season of the year warranted us in keeping him two months longer.

He measured in height two feet eight inches; from his ears to the root of his tail, four feet eleven inches; round the body back of his shoulders, seven feet one inch; breadth over his shoulders, two feet four inches—over his loin, two feet two inches—when clove down the back he measured one foot four inches deep on the shoulder, and his hams weighed sixty, and sixty-one and a half pounds, which are all lean with the exception of about one and a half inches only of fat on the outside.

We wish at the same time, to inform those subscribers to your invaluable journal, who are breeders of Berkshire hogs, that our friend Siday Hawes, Esq. sent us out last fall four Berkshire pigs—two boars and two sows, selected by him expressly for us, regardless of trouble or expense, with a view of our carrying forward and improving on the good properties of those hogs, previously imported by him, of which we held a good sample. They are in color similar to those formerly

imported, and sent out by the same gentleman. To give a minute description of them, would be unnecessarily encroaching on your room, as every individual either personally acquainted with Mr. Hawes, or possessed of some good hogs, descended from his importations, is no doubt convinced of his good judgment, and will readily admit their claim to superior excellence.

We shall have six or eight litters of pigs to dispose of, the present spring, the produce of four different boars, (one imported,) between which there are no connection, which will enable us to select our pigs for customers ordering them by letter, from different sires and dams, which will be an advantage as regards their future progeny.

We are most respectfully,

A. & G. BRENTNALL.

Canterbury, Orange, Co. N. Y.

Culture of Corn, Roots, &c.

JESSE BUEL & CO.—I have not seen a sample of the Cultivator and Farmer, but from the excellence of the late Genesee Farmer, conducted by the editors of the present work, I have the fullest confidence that it will produce the happiest effect on the farming community. I know that the forty copies of the Monthly Genesee Farmer, which I procured last year and circulated in this county, (twenty-four of which included the four volumes of the work,) produced a new and valuable stimulus to agriculture in this country; but none I believe were so much benefited by it as myself. The four volumes cost two dollars, and I am warranted to say, that it was worth to me more than one hundred dollars in my crop of roots, and in the additional quantity of corn, leaving out of the calculation the many other advantages which I derived from it.

I planted seven acres of Dutton corn on the 10th of May last, and on the 5th of September it was ripe, and commenced cutting it up. Each evening I put up the stalks in small shocks; about the middle of October I

on the ground. It may be gaged to cut as high as the grain will admit, and the nine feet swath streams from the cradles to the thrasher so evenly that no more power is required to finish fifteen to twenty acres a day, than is necessary to drive a common thrasher, which only thrashes say two hundred bushels in a day, with many hands in attendance.

Respectfully,

G. G. CARPENTER.

Wheatland, March 11, 1840.

TREATMENT OF SANDY SOILS.

MESSRS. EDITORS—Should you deem the following remarks, copied from a letter written by one farmer to another, in reply to some inquiries and in answer to some objections, worthy of a place in the columns of the Cultivator, they are at your service.

X. Y.
“Dear Sir—My reasons for supposing that in deep sandy soils, (or those in which silex predominates,) much of the value of manure was lost by infiltration, or passing below the roots of plants, were the opinions of such practical and scientific men as Von Thaer and Davy in Europe, and Jackson and others of our state geologists, in this; observation of the operation of water on the soluble parts of manures, and the facility with which these parts are separated and carried off when the water is in excess, as is evident from the color of water in yards, and that which leaches from them, and also from some personal experience in that class of soils. One part of the farm on which I many years since resided in New-England, was a tract of very light sand, which was cultivated according to the exhausting mode then in use, and which, after I left, passed into the hands of an old fashioned farmer, who has continued the system of cropping, until the land is now incapable of producing any thing, and is mostly a bare surface, or nearly so, of sand. In recommending a different course to him, a few years— a different course founded on manure, clover, and plaster, his reply was, ‘manure does no good, it sinks into the sand, and is lost to the plants on the surface.’ Now, although I believe I could take those same sand plains, and in five years make them the most fertile part of the farm, yet, for the reasons already assigned, I have been inclined to believe that on porous, gravelly, or deep sandy soils, much of the benefit and value of manures was lost by sinking with the water beyond the reach of plants. It is the most active part of the manure, the salts, that are the most soluble, and hence the most liable to be lost. I may be mistaken, however, in some of my inferences, and in the British Husbandry, I find a remark that reminds me of the opinion expressed by your neighbor; viz. that on such soils the manure does not sink beneath the soil plowed; that work asserting that on the light sands of Belgium, their system of manuring and plowing, with their course of cropping, soon converts the sand into a rich soil as low as it is stirred by the spade or plow.

In the cultivation of what are termed sandy soils, experience would seem to have taught European farmers, that it is better in most cases to form the manures into compost, than to apply it long or fresh. Their method of forming compost is to place a layer of sods, muck, or swamp earth, (the latter being considered very valuable as containing usually a quantity of clay,) then a layer of fresh manure, then another of sods or earth, and then of manure, and thus to alternate until the requisite height is reached, and then it is left to ferment and rot. The covering of the heap is of turf, grass side down, as are all the sods used, to receive the wash or drainings of the manure. These piles are occasionally watered by urine, but this can be dispensed with. Where there is a deficiency of lime in the soil, or where the compost is to be used for grain crops, layers of lime are added to the heap, but these layers are not placed in contact with the manure, but between layers of sods or earth. These heaps of compost made in autumn are ready for use in the spring, and are applied to the crops or to the soil, as is wanted for the purpose of the farm. I have some doubts whether compost heaps made in this way, in our climate, late in autumn, would decompose during our winters, so as to be fit for use in the spring, for root crops; but if they would, I have no doubt it would be the best mode of manuring your land, or indeed almost any other.

For myself, I think that rotted manure, as being more quickly felt by the plants, is better for roots than that which is long, though roots and corn are the only crops to which long or fresh manure should be applied. If ashes could be obtained, I should use them liberally, either in the compost heaps, or applied directly to the land. On sandy soils few things are more useful. A short time since, in visiting a neighboring town, I observed a Mr. L., an excellent farmer, drawing manure. His method was to draw one load of stable manure, place it where wanted, and then go to an old ashery, and get a load of leached ashes, which was placed on the manure. In this way, the gases and volatile salts of the manure are kept from evaporation, and the salts that abound in ashes are incorporated with the manure. His system has produced some of the most beautiful fields of grain I have ever seen; and though his soil is not quite as sandy as yours, I have no doubt would succeed well with you.

One difficulty in a soil constituted as is yours, is that it parts with moisture so readily, that manure, if applied fresh or long to a crop, is kept in so dry a state that decomposition is but slowly or partially effected, and the change of the earths that compose the surface, into

soil, or rendered fertile, is not so complete or rapid, as when the proper degree of moisture is present, or the manure is rotted and made into compost before its application to the land. To this want of moisture, and consequent entire dryness of the manure in which they were planted, must be attributed the failure of the potatoes of which you speak to me. In our soils that are so retentive, the difficulty, though more serious, is of an entirely different kind. We find it necessary to lay our land, cultivated with roots or corn, into ridges, in which the manure is placed, and rare indeed is it to find that the manure is not decomposed at the time of digging the roots, or plowing after the corn. No matter how near the surface, if covered at all, it rarely is found dry; and I think probable, that so far as decomposition is concerned, or the manure to be kept moist, (which is essential to its doing any good,) you would find much benefit from covering it a sufficient depth to prevent evaporation, and if possible, thus secure that proper degree of moisture, without which fermentation cannot proceed. Deluged by water, as manures on too retentive soils frequently are, plants are very little benefited by them; without moisture, as they must sometimes remain on very porous soils, they do not ferment, and while dry are comparatively useless. With us, under-draining and the use of means to give more dryness and friability, is what is required; with you, the giving great tenacity and the power of retaining moisture, is the grand desideratum.

In the treatment of sandy soils, I should rely much upon the incorporation of clay with the surface, either in the shape of clay marl, or made into compost by mixing with manures in layers as above described. The capacity of this earth for retaining moisture, or rather its attraction for it, renders it one of the most effectual agents in benefiting soils that are too light; and very fortunately for the agriculturist, it most usually occurs in abundance near where it is wanted.* Ashes contain both clay and lime, and are therefore beneficial in two respects: they serve to assist sandy soils in retaining moisture; to correct acidity where it exists; (which, however, is not often the case with sandy soils, but is a characteristic of wet ones;) and they give some lime to soils, that sometimes are destitute, or nearly so, of that necessary ingredient.

For myself, I should have no fears, were I the owner of a farm like yours, about making it capable, (were it not, as yours already is) of producing any kind of crop whatever. Most gladly would we, who work such heavy, tenacious, yet strong soils, exchange for such as are more friable. Did it not already exist, any degree of

* NOTE BY THE EDITORS. The introduction of the above suggestion as to the importance of clay in the ameliorating of sandy soils, induces us to add an extract or two, illustrating the manner of its use, as well as its value; the first will be from Prof. Emmons' Geological Report of 1838. The Professor says, in using clays—

“The great point to be attended to is to secure a sufficient degree of fineness, that they may be incorporated with the soil, and form, strictly speaking, a constituent part of it. To attain this object, it is necessary that they should be raised in the autumn and placed in heaps, that they may be exposed to frost and the action of the atmosphere through the winter. To assist still further in the process of pulverization, it is better to mix them with barn-yard materials, straw, manure, and refuse of any kind, either animal or vegetable. This course being pursued by them, they should be spread as evenly as possible on green sward, that they may enjoy the further benefits of air, moisture, &c. by direct exposure during the season. Besides, the gas in passing up through the layer, will greatly assist in producing a comminuted state. The succeeding season it is in a state to be plowed in, when it is duly prepared to become a constituent part of the soil. It is only in this way that the stiff and adhesive clays can be broken up, and prepared for incorporation with the other earths.” * * * * “Most of the clays of this state are those which are marly; or which are combinations of clay and carbonate of lime. They are widely diffused, but their value is not highly appreciated. The time is not distant, however, when they will be as highly esteemed as plaster. They have even one advantage over plaster, that their effects are more lasting when they have had a due preparation.” Report, page 222.

The other extract will be from Judge Buel's Farmers' Companion, and is particularly valuable as illustrating the manner in which, by the use of clay and skilful cultivation, he produced such an entire change in the character of the sandy parts of his farm.

“Our practice differs somewhat from the recommendation of Professor Emmons. Our leisure time for drawing clay is generally in the winter, and we are enabled to obtain it at this season from the clay banks in Albany. We do not place it in piles or mix it with other materials: but scatter it immediately from the wagon upon the sward, as evenly as its adhesive properties will permit. In this way it becomes better exposed to the ameliorating influence of the weather. The frosts and the rains break down the lumps; and when the clay has afterwards become dried, it is readily pulverized by the maul or roller, and distributed by the harrow.” Page 42.

The quantity of clay required to impart tenacity to a sandy soil is comparatively small; and among the many farms in the older settled parts of our country, that have been pronounced worthless, if not abandoned, as light sand, we scarcely know of one where the materials for rendering them retentive, and of course valuable, were not at hand. Sandy soils, if not based on clay, usually abound with what are called swamp-holes, ponds, or marshes, and these from time immemorial, have been the receptacles of vegetable matter, and that they contain clay, the presence of the water is the most conclusive proof. Let no farm be abandoned because it is sandy, until careful examination has proved that the proper article, and the cheapest, for its amelioration, does not exist in the vicinity.

fertility can be easily imparted to yours; while freedom from moisture, and friability, and ease of working, are not, without expense and difficulty, given to ours. I must venture another hint: your situation and that of your farm, is most suitable for instructive experiment; you have the means and the inclination to make them; and I hope that in instituting them, a record of the whole will be kept, that others may be benefited as well as yourself. There is another important point. Have you ascertained, by analysis, the kind and proportion of earths in your soil? If not, Professor D. B. would doubtless analyze a specimen for you. You would need to take the earth from a little below the surface, where it has not been manured, or is in its natural state. If taken from several places, thoroughly mixed, and the specimen to be analyzed taken from this mass, the result would give a very satisfactory average. Almost any one can determine the proportions of sand, lime, and clay in the soil, but the detection of the salts, or the oxides, is a more difficult and delicate matter.

S. D.”

DURHAMS vs. DEVONSHIRES.

MESSRS. EDITORS—Permit a subscriber to make a remark or two on an article in your December number, recommending Devonshire Cattle in preference to the Durham. I would first observe that the recommendation comes under no responsible signature; the assumed name of “Phelim,” is no warranty for the good faith, disinterestedness or soundness of the advice, and in a matter of such importance, the incurring the vast expense of changing one high priced breed for another, we should at least know in whose judgment and experience we are asked to confide. In general, it would heighten the character of your publication, if all your correspondents were required to give their names, with their communications, but more especially where facts are stated or advice volunteered.

Phelim informs us that among northern farmers, the Durham cattle are considered “not adapted to the climate, the pasture not sweet or rich enough, and the winters, too cold or severe.” He then asks “whether it would not be a good plan to buy some other breed that will keep on short pasture and stand our severe winters?” Admitting his premises, the answer to this inquiry would undoubtedly be in the affirmative; but it seems to me that in pitching upon the Devons as a substitute, he could not have made a worse choice among all the known breeds of improved cattle. I will admit that the latter, being a lighter breed, may exist on shorter commons, but why does he expect them to possess more hardiness than the Durhams? Is it because his favorites derive their origin from the mild relaxing climate of Devonshire, where myrtles and oranges endure, almost without protection, what can hardly be called a winter, while their rivals from their birth are accustomed in their native county Durham to face the blasts of the frozen North Sea, or has any legerdemain (we know the arts of cattle breeders are wonderful,) transformed the delicate constitution of the Devons into something like that of the Arctic Bear?

In other respects Phelim has not given an exaggerated description of this celebrated stock, but I must have better evidence than unsupported assertion before I can believe that they excel the Durhams in ruggedness of constitution. In our southern states, the Devons would probably find a congenial climate, while the improved Durhams, mingling the blood of the Flemish and native British races, have all the predisposition that descent can give to make them hardy, and to fit them for our own rigorous seasons. In evidence of this, we see them extending themselves even into the Scottish territory, whilst the other (Devons) are never attempted. If a change becomes necessary, would it not be better to take them from a more northern than a more southern district. With this view, I do not recommend, but I venture to direct public attention to the far-famed Ayrshire breed, as possessing all the qualities Phelim presumes the Devons to possess, except perhaps, their peculiar fitness for the draught, while they are altogether superior as a dairy stock. I do not surrender the Durhams, however, where they are not stinted in their summer pasture or starved during winter upon straw, and the following instance will show that they rank high as draught cattle; a pair of Durham steers raised by the late Mr. Brentnall of Goshen, have in one day gone from that village to the Landing at Cornwall, a distance of about 20 miles, and returned the same day with a load!

One point of conceded superiority the Durhams possess, which has not been touched upon; that of early maturity. Phelim confesses that the cows of the Devonshire stock are smaller than the bull; this is a disadvantage, and hence their calves, as far as my experience goes, are small, puny and of slow growth, requiring at least one year more than the Durhams before they are fit to breed.

Having thus freely criticised one communication, can I be forgiven for a further trespass, by animadverting on the article headed “Saltpetre in meat,” from the pen of an old friend, the ingenious and learned Professor Rafinesque? Is not his alarm about that “deadly poison,” which we administer to the community in our hams and other salted meats, entirely gratuitous? Nitric acid is indeed a most corrosive ingredient, but when combined with potassa, and become a neutral salt, why is it more dangerous than common table salt, which is a compound of soda and muriatic acid, the latter quite as formidable as aquafortis in an uncombined

THE CULTIVATOR.

state? Unless there be some acid extracted during the operation of curing, having a greater affinity for the potash than nitric acid, and thus setting it free in its deleterious state, I presume no danger need be apprehended from its moderate use, which is said to be serviceable in intemperating the fibre of animal substances. If our preserved meats become insoluble, the change must be in a great part referred to the salt and the pyrolytic acid of the smoke-house. At the same time, I agree with the Professor in thinking, that sugar in a large proportion, might be beneficially applied far more generally than we find to be the case in these processes. But I dare intrude no farther on your good nature, and am therefore with great respect,

Yours, &c., COMET.
N. B. I have no Durhams or cows from the banks of Ayr, for sale. Newburgh, February 1, 1840.

SUCCESSFUL FARMING.

MESSRS. GAYLORD & TUCKER—I think I have been very successful in farming the last year, and will give you an account of the different crops I have raised and their product, from 38 acres of limestone land. I do not mean to boast of being able to raise more from an acre than other farmers, or of having raised and very superior crops; but on the contrary, I am aware of having committed many errors in my system of farming, and am convinced that my crops last year ought to have been one-fourth heavier, and that in future I shall increase the product from year to year above what I have raised last year.

3 acres of barley, 180 bush	
7 do do 240 do	
5 do do 225 do	
	635 bushels at 70c. \$179 50
4 acres I. Spring Wheat, 125 bushels at \$1.10	137 12
54 " of Rye, 24 bushels at 75c.	183 00
10 " of clear Timothy, 20 tons, \$15.	300 00
2 " Lucerne and red clover fed green for soiling, cut three times and valued at .	60 00
1½ acres in Potatoes and Cabbages, 105 bushels potatoes at 25c.	26 25
750 heads of cabbages at 3c.	22 50
Yours respectfully,	\$1,208 37
FREDERICK SEITZ.	

Easton, Pa. March, 1840.

CULTURE OF INDIAN CORN.

MESSRS. EDITORS—Careful observation has satisfied the writer, that the present system of cultivating Indian corn, is generally very defective, and can be greatly improved. Not more than half a crop is obtained upon an average, except on new or very strong land. We also see this valuable crop frequently destroyed by autumnal frosts.

The following is an outline of the plan which has been tried by the writer, with entire success. Good crops have been obtained—75 bushels to the acre—and the corn invariably ripened before the frosts of autumn could injure it.

Spread upon the ground, before plowing, 20 to 30 ox cart loads of good, long, or unrotted stable manure; when the corn is planted, put into the hill one half of a shovel full of well rotted manure. This will give the corn an early and vigorous growth, until the roots are long enough to derive sustenance from the long manure. By thus giving it an early start, it will ripen two or three weeks earlier than it otherwise would. The long manure will carry it out, and make more corn and less stalk, than when all rotten manure is used. Let the manure, which is to be kept until it has rotted, be piled up, and covered, so as to protect it from rain and sun, and it will lose much less of its strength than if exposed. Some may say, that the quantity recommended per acre is more than can generally be afforded. Unless the land is very strong, or in high till, less can not be afforded. As a general rule, 5 acres, with 100 loads of manure, will produce more corn than 10 acres with the same quantity, beside the great saving of labor and ground. It is very clear that farmers generally do not manure their land high enough for Indian corn. Upon award land, rotten manure is indispensable to give the corn a start, and insure an early and full crop.

Poudrette is a good substitute for rotten manure, when it can be had.

No farmer should be satisfied until his average crop is at least 75 bushels to the acre.

A LOVER OF GOOD HUSBANDRY.

New-York, March, 1840.

Cutaneous Diseases of Sheep.

MESSRS. EDITORS—The disease, as described to exist in sheep, by your correspondent “J. V. H. Clark,” is strictly cutaneous, but not dangerous nor catching. It is caused, first, by sheep being kept on too short an allowance of feed, when they get hunger-bit, (vorhunger) pinched with hunger.

Secondly, by being kept in sour and wet pastures; and although they may have plenty of feed, and fill themselves, yet, the blood becoming gradually vitiated and acrimonious, the requisite and healthy nourishment is not conveyed through the system, which partly causes respiration to stop. These vitiated juices, becoming more and more acrimonious, seat themselves in the skin, and when the sheep begin to thrive again, it starts the dandruff and causes itching; hence they are seen nibbling and pulling out small flakes of wool. The period

is from one to four months, and even longer, before an eruption takes place: And if sheep are long exposed in such pastures, the worse the effect—even the rot may in a higher or less degree be contracted, when this disease becomes permanently fixed, (seated;) there is then no help for the poor animal, but it is inevitably doomed to destruction.

Thirdly, it may be brought on by fever.

I know of no particular cure for it—and none to my knowledge has ever been published, either in this country or Europe. Whenever I have had any individuals that were affected with it, I bettered their feed by giving them plenty of oats and hay, and as much salt as they would eat. Should, however, the sheep be poor and feeble, great caution in feeding is necessary.

I am yours, most respectfully, H. D. GROVE.
Buskirk's Bridge P. Office, March, 1840.

Culture of Carrots, Ruta Baga, &c.

MESSRS. GAYLORD & TUCKER—Having been a subscriber to the Cultivator three years, I have derived much instruction and pleasure from its perusal; and wishing to impart instruction as well as receive it, I will give you my experience in the root culture the past season. I have been engaged in it for the last three years on a small scale, and have derived much profit from it. I sowed half an acre of Swedish turnips on a wet soil, and the wet weather caused almost a total failure; one-eighth of an acre of carrots, the land a sandy loam, was in corn the previous year, and the product was eighty-five bushels, or 680 to the acre. I also sowed one-eighth of an acre of mangel wurtzel, and the product was seventy-five bushels, or 600 to the acre, the land being the same as the carrots; both pieces received a liberal dressing of unfermented manure. Agreeably to my experience, one acre of carrots is worth more to feed farm stock, than four acres of ordinary good grass; the carrot contains more nutriment than the wurtzel or ruta baga, and is easily raised, not being subject to the depredations of the insect.

B. STANTON.

South Westerlo, Jan. 22, 1840

ROHAN POTATOES.

MESSRS. EDITORS—I have seen several statements in the Cultivator, of large yields of the Rohan potato. Permit me to give you a statement of the yield of two Rohans, which you had the kindness to present to me last spring. One of them I cut in fifteen parts, an eye in each part, and made fifteen hills—nine of the hills were afterwards plowed up, and the remaining six produced half a barrel of fine large potatoes—the largest weighing 3 lb. 3 oz.—the other one I gave to a neighbor of mine; it weighed half a pound, and had seventeen eyes. He made fifteen hills, and the yield was a flour barrel rounded over, full of the largest size, weighing 138½ lbs. some weeks after being housed—which I think is the largest yield, of any statement I have yet seen of this valuable vegetable. W. J. SLINGERLAND.

Minaville, Montgomery county, N. Y.

LARGE CALF.

Mr. Luke Watson of East-Windsor, Hartford co. (Conn.) has a bull calf of the short horn breed, that weighed, when three months and three days old, 336 pounds. What is very remarkable, he is the second calf of a very large heifer three years old the first of April next. She brought her first calf at the age of twenty months and a half—her second at the age of two years seven months and a half.

East-Windsor, Conn. Feb. 15, 1840.

TO CORRESPONDENTS.

An apology is due to our numerous correspondents and friends, for the want of proper and immediate attention to their letters, inquiries, &c. which has been occasioned by the necessary absence of the resident editor at Rochester most of the winter. A number of inquiries now on hand will be answered next month.

Several communications intended especially for this No. are unavoidably delayed till our next. Among them “EVELYN,” and Mr. Cain’s Plan of a Dwelling-House.

The first edition of the January, February, and March numbers having been exhausted, we are getting out a new edition, and hope to be able to furnish those subscribers who have not received their numbers in the course of two or three weeks. We have made such arrangements as will enable us hereafter at all times to supply back numbers.

Those subscribers to vol. 6, who have not received the December number, are informed that it will be sent them just as soon as the portraits to accompany them can be procured. The fault lies with the copper-plate printer, who injured the plate from which the portrait of Judge Buel is taken, so much that it became necessary to have it re-engraved.

The Genesee Farmer.

In reply to several inquiries, we would state, that no complete sets of the Genesee Farmer, either of the weekly or monthly paper, can be furnished. We have quite a number of the 4th, 7th, and 8th vols. of the Weekly Genesee Farmer, which, to close the concern, will be sold at half the subscription price, viz: \$1 per volume. We have also, a supply of the 1st and 3d vols. of the Monthly Genesee Farmer, price 50 cents per volume.

Contents of this Number.

Quarterly Advertising Sheet—Agricultural Geology,	53
Culture of Potatoes,	54
Grafting—Apples,	55
Work for the Month, on the Farm, and in the Garden—	55
Curraus and Gooseberries,	55
Culture of the Pea—The American Swine Breeder—The Farmer’s Instructor—Blacklock’s Treatise on Sheep—Manufacture of Maple Sugar,	57
Composition of Fertile Soils—Culture of Rape—Best Cows for the Dairy,	58
Dictionary of Terms used in Agriculture,	59
Gratuitous Agent at Washington—Letter from Mississippi—Cisterns—Mr. Lossing’s Berkshires—Setting Fence Posts in Stone—Orchard Grass—Bees—	60
Management of Sheep, No. 10, by L. A. M.—A new variety of Sheep, by H. S. R.	61
To Dairymen or Dairywomen, by Agriculture—Hot Air Furnaces, by J. J. Thomas—Good Crop of Wheat, by R. Foster,	62
Durant’s Report on the Culture of Silk,	63
Potatoes, Spring Wheat, Muck for Rye, China Corn, by D. L. Dodge—Field Gates, by Myron Adams—Weather, Crops, &c. in Indiana, by S. Robinson—Experiments in Maryland, by Experimenter,	64
Account current with various Crops, by Eben Smith—Hay Rack for Sheep, by L. G. Northrup—Harrow for Old Lands, by John Cain—Rearing Calves on Milk and Meal, by D. Tomlinson—Preserving Hams for Summer use, by C. Budner—Sore Teats in Cows, by A. Farmer,	65
A Hoosier Calf, by C. Berkshire Hog Constitution, by A. & G. Brentnall—Culture of Corn, Roots, &c. by John Myers—Importance of Advertising, by C. B. Carpenter’s Harvesting Machine, by G. G. Carpenter,	66
Treatment of Sandy Soils, by S. D.—Durhams vs. Devonshires, by Comet,	67
Successful Farming, by F. Seitz—Culture of Indian Corn, by a Lover of Good Husbandry—Cutaneous Diseases of Sheep, by H. D. Grove—Culture of Carrots, Ruta Bagas, &c. by W. J. Slingerland—Large Calf—Notice to Correspondents—Genesee Farmer,	68

List of Cuts.

Fig. 34—Hot Air Furnace,	62
35—Field Gate,	64
36—Hay Rack for Sheep,	65
37—Harrow for Old Lands,	65
38—Hoosier Calf,	66
39—Berkshire Hog,	66

SPECIAL AGENTS.

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ARTICLES.	PRICE CURRENT.	
	New-York, March 25.	Baltimore, March 28.
Beans, white, per bushel,	2 00—	2 25—
" " per cwt.	8 25—	1 25—
Beef, per cwt.	0 07—	0 08—
Bacon, western, per lb.	0 07—	0 09—
Butter, fresh per lb.	0 18—	0 23—
Cheese, per lb.	0 09—	0 11—
Cotton, best, per lb.	0 10—	0 12—
Fibre, best, per barrel.	5 00—	0 75—
Grain—Wheat, per bushel,	1 05—	1 14—
" " Rye, per bushel,	0 56—	0 57—
Oats, per bushel,	0 22—	0 34—
Corn, per bushel,	0 56—	0 50—
Pork, per lb.	1 0—	1 12—
Pork, in hog, per cwt.	6 50—	7 25—
Skeds—Red Clover, per lb.	0 15—	0 16—
Timothy, per bushel,	2 10—	2 15—
Saxony, fleece, per lb.	0 50—	0 53—
Merino, per lb.	0 40—	0 42—
" " and common, per lb.	0 34—	0 37—
Sheep, per head,	4 50—	5 00—
Cows and Calves, each,	25 00—38 00	35 00—60 00

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